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Look and Learn

by WILBUR L. BEAUCHAMP, GERTRUDE CRAMPTON,

and WILLIAM S. GRAY, Reading Director

BASIC STUDIES IN SCIENCE: CURRICULUM FOUNDATION SERIES

Scott, Foresman and Company

CHICAGO ATLANTA DALLAS NEW YORK

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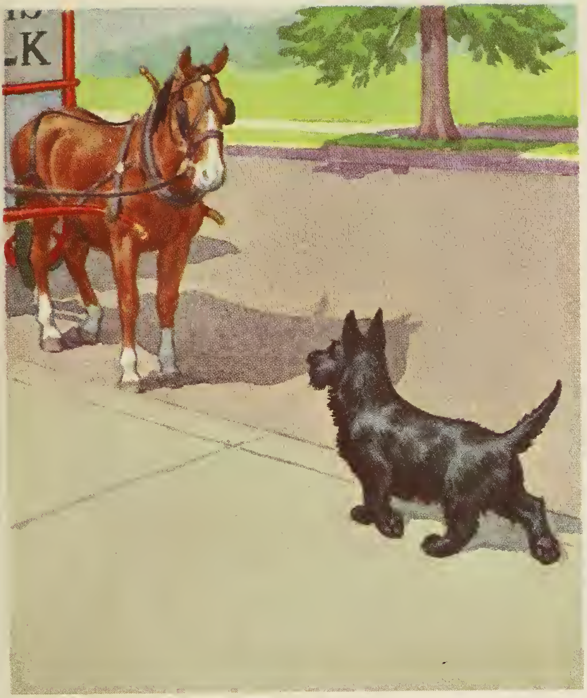
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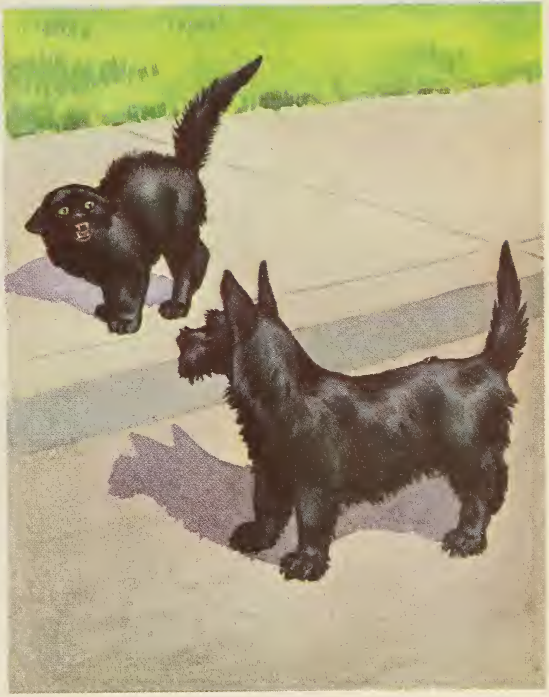

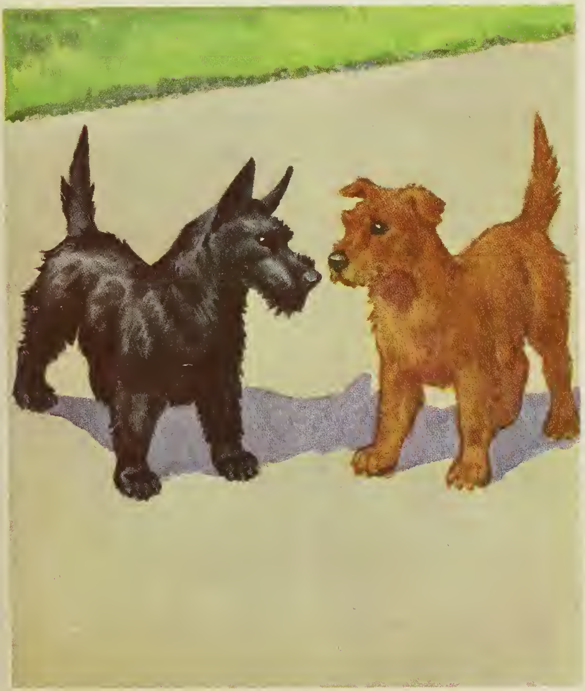

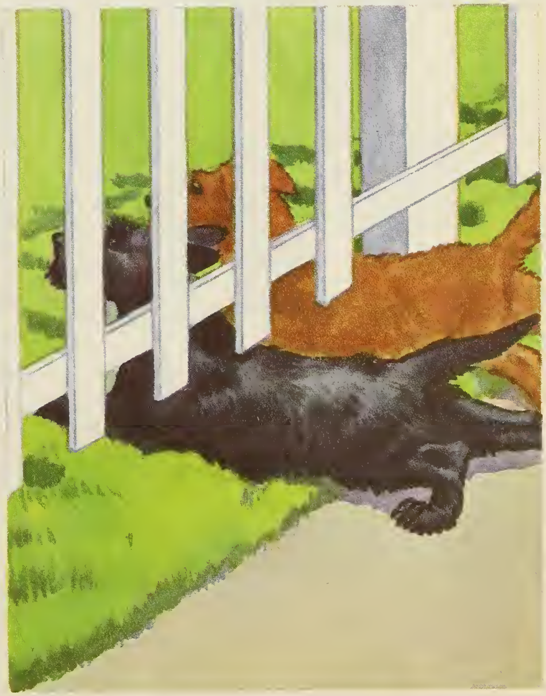

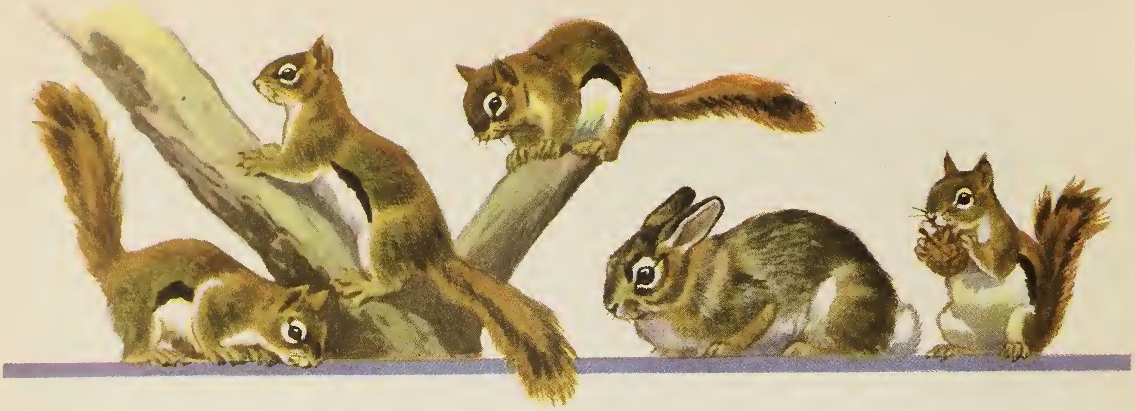

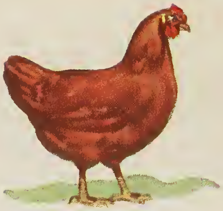
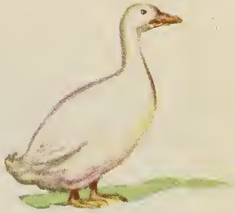

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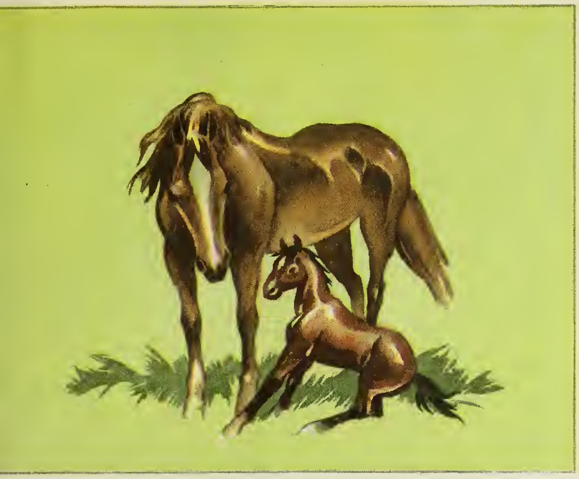

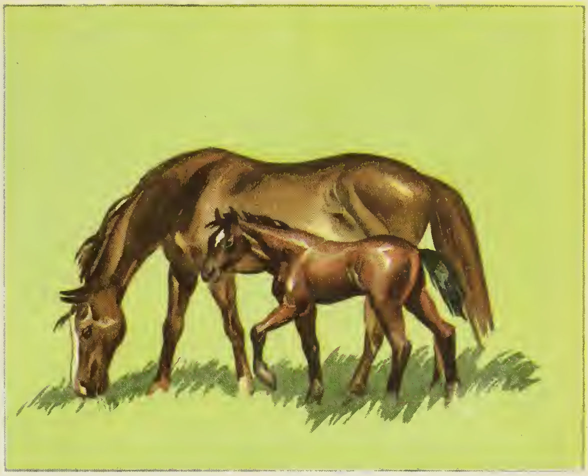

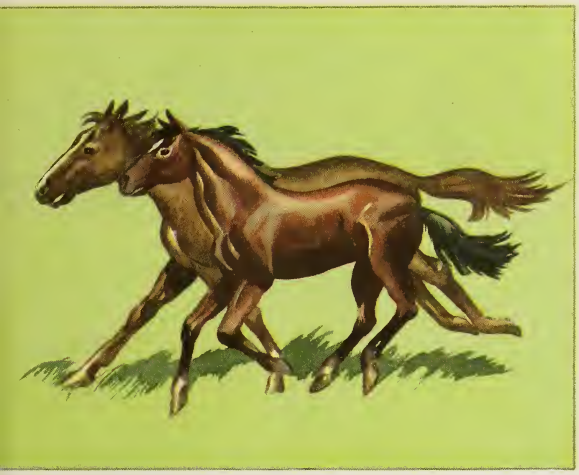

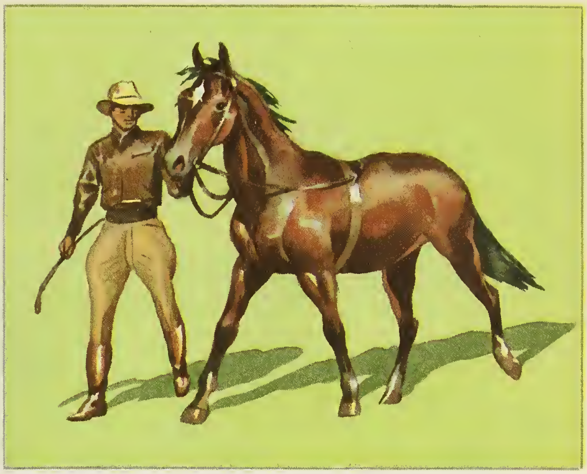

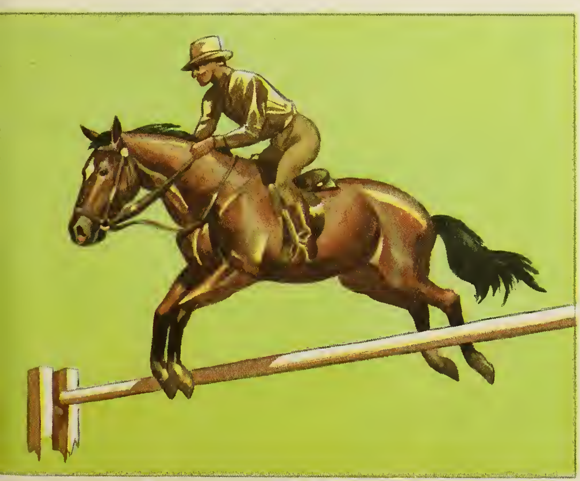

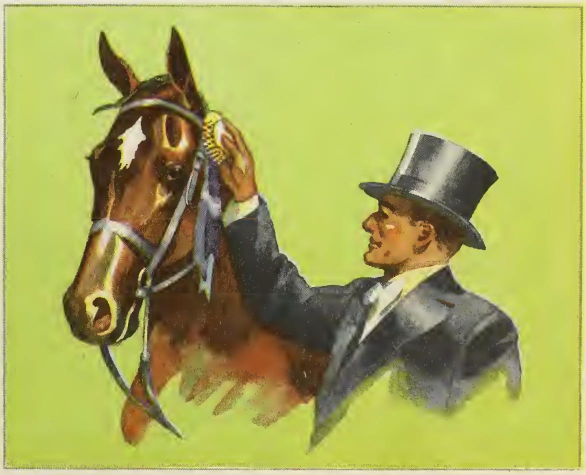

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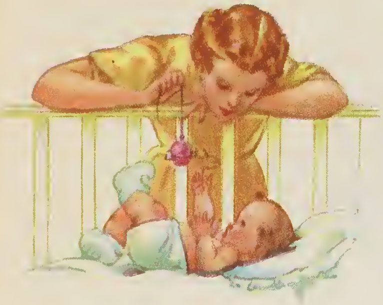

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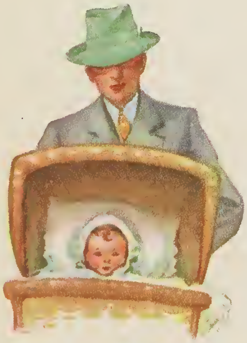
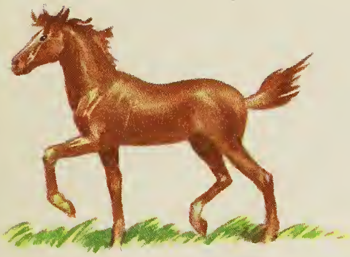
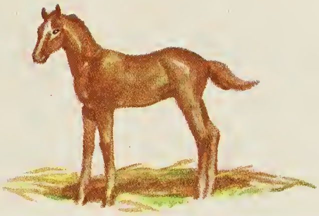
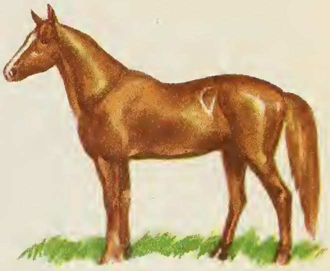
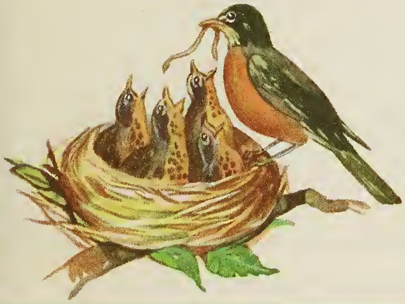


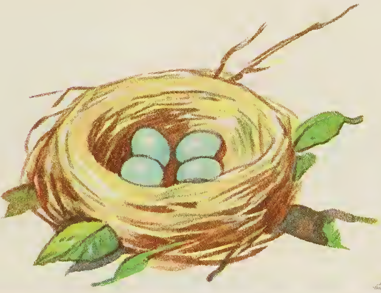
Animals Grow Up

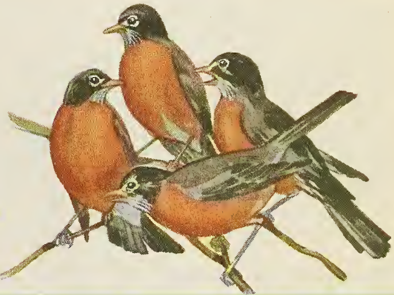


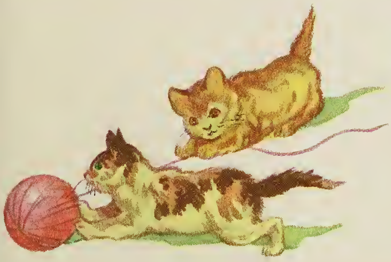


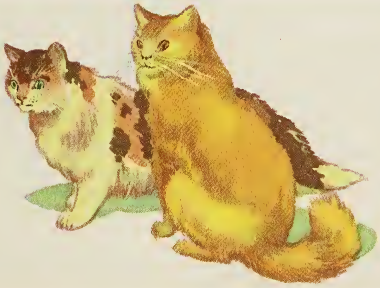


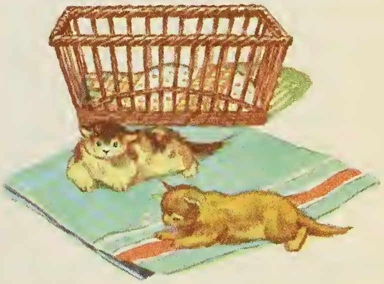


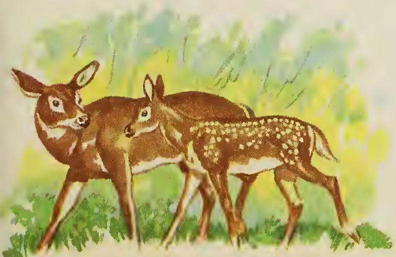


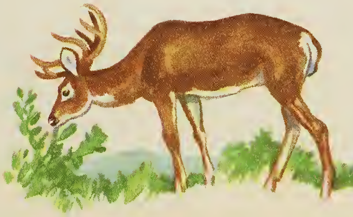


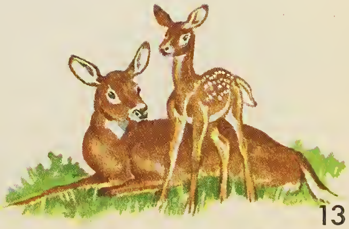












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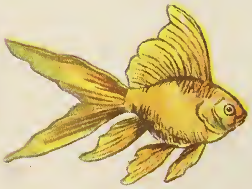
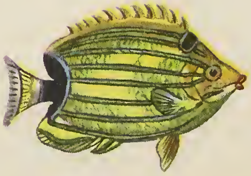
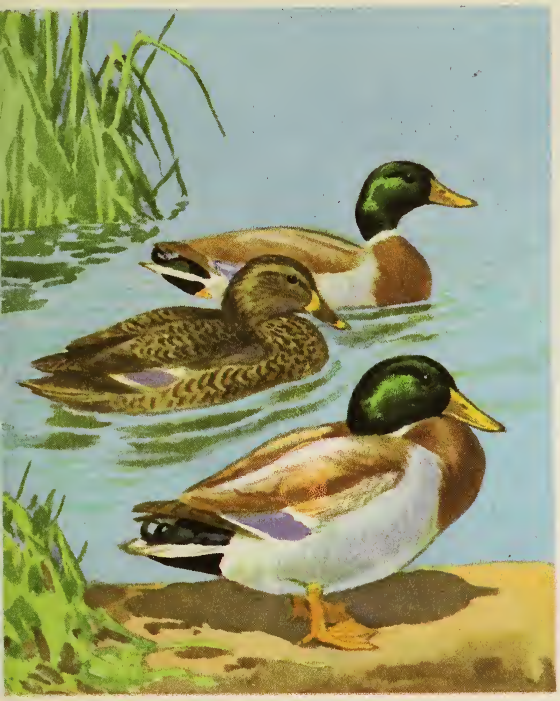
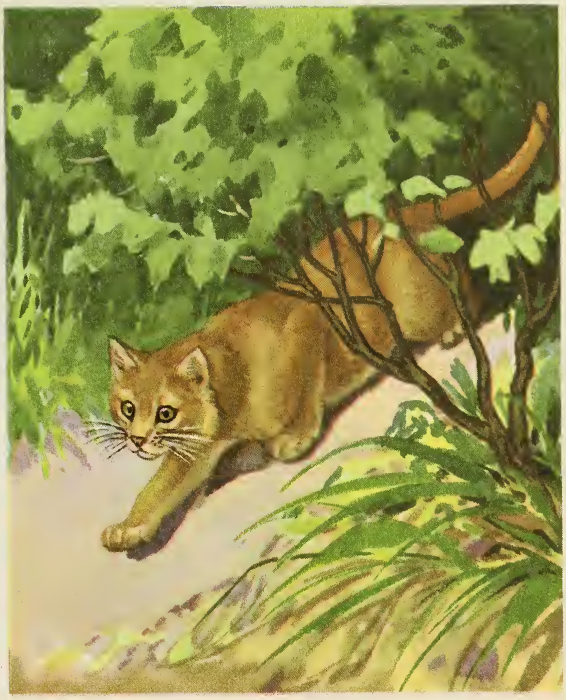
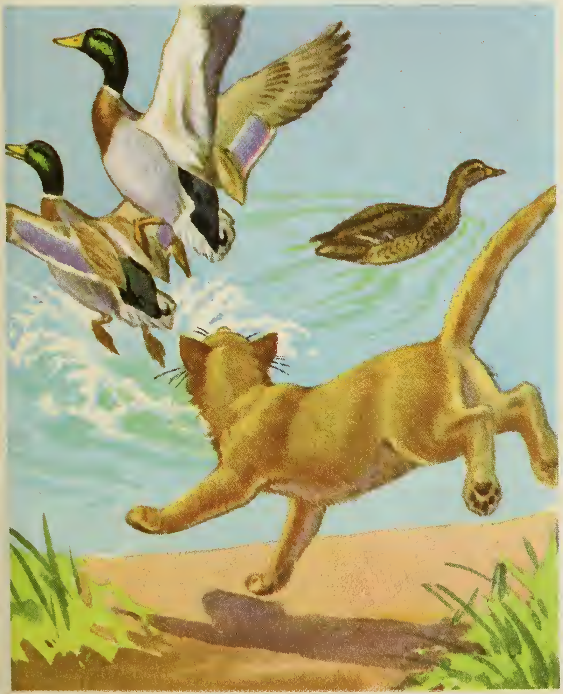
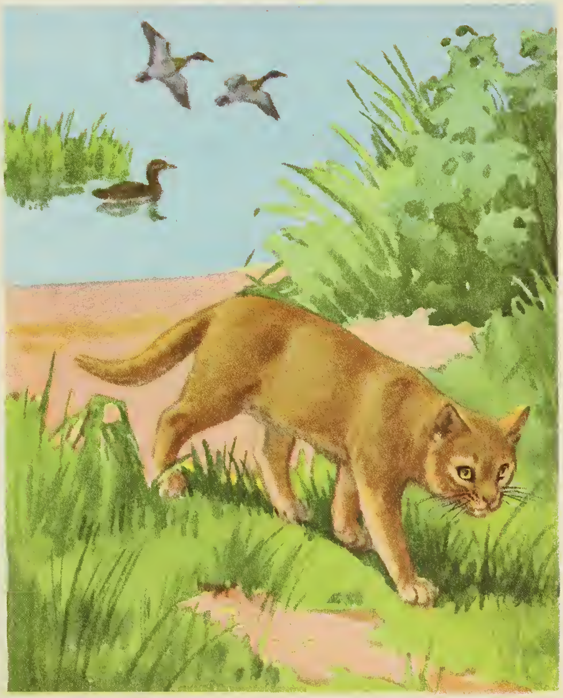



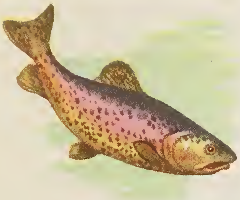
Three Frightened Ducks

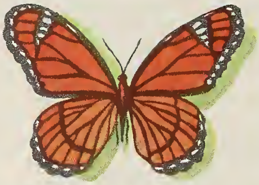


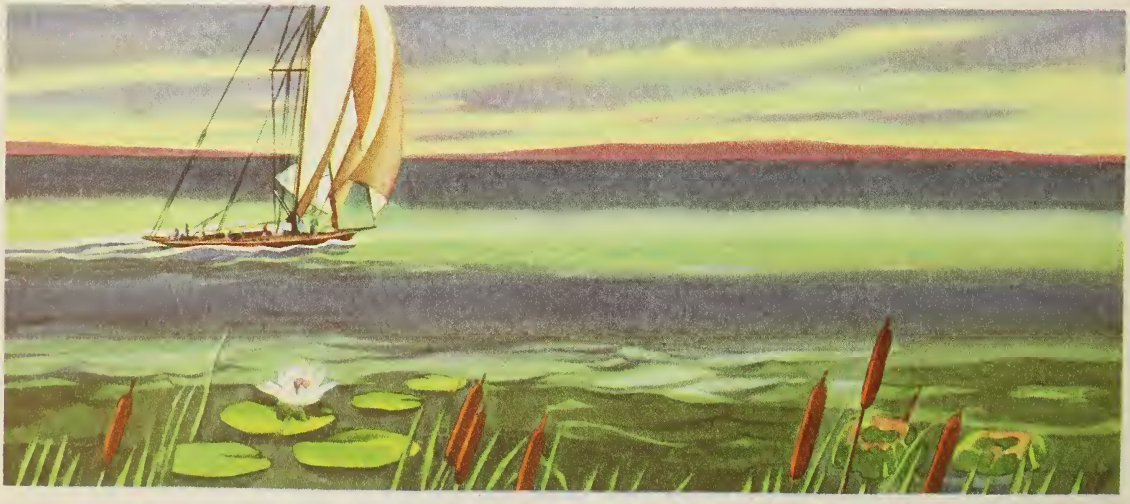


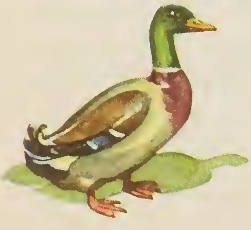


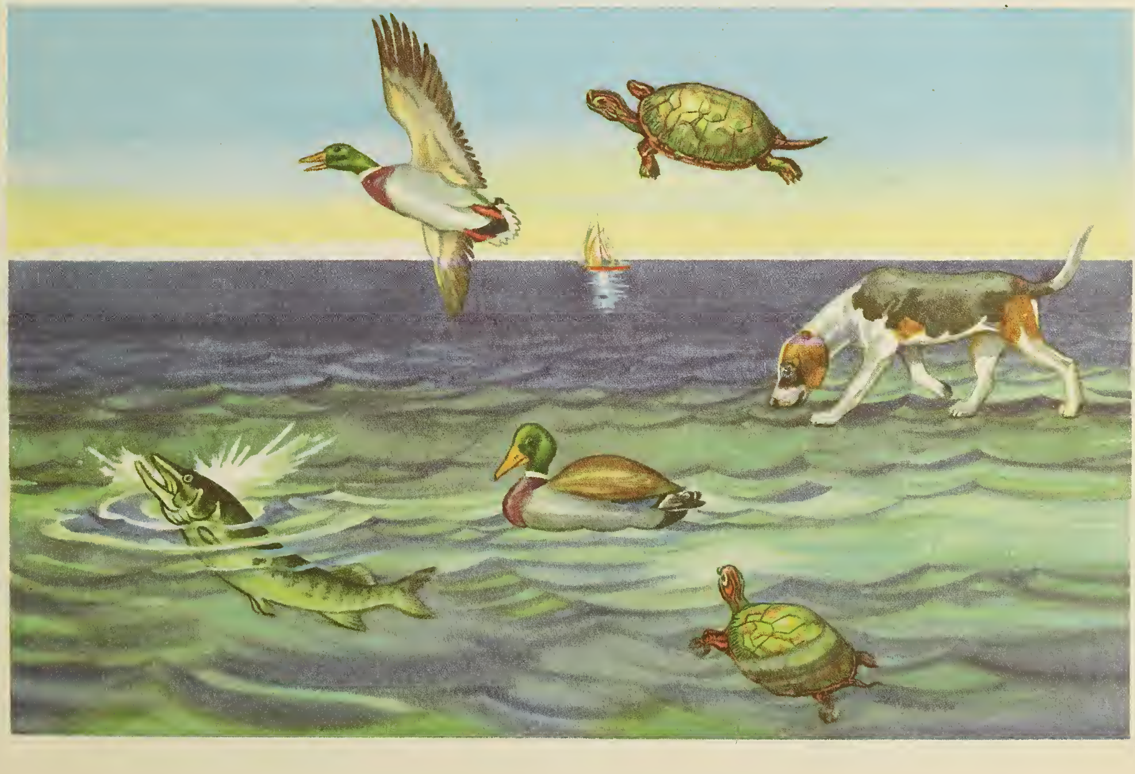












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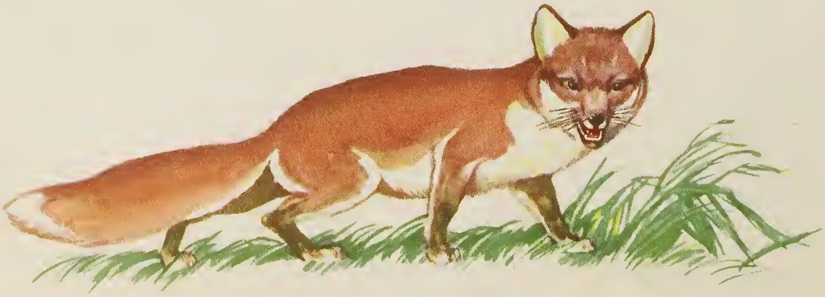
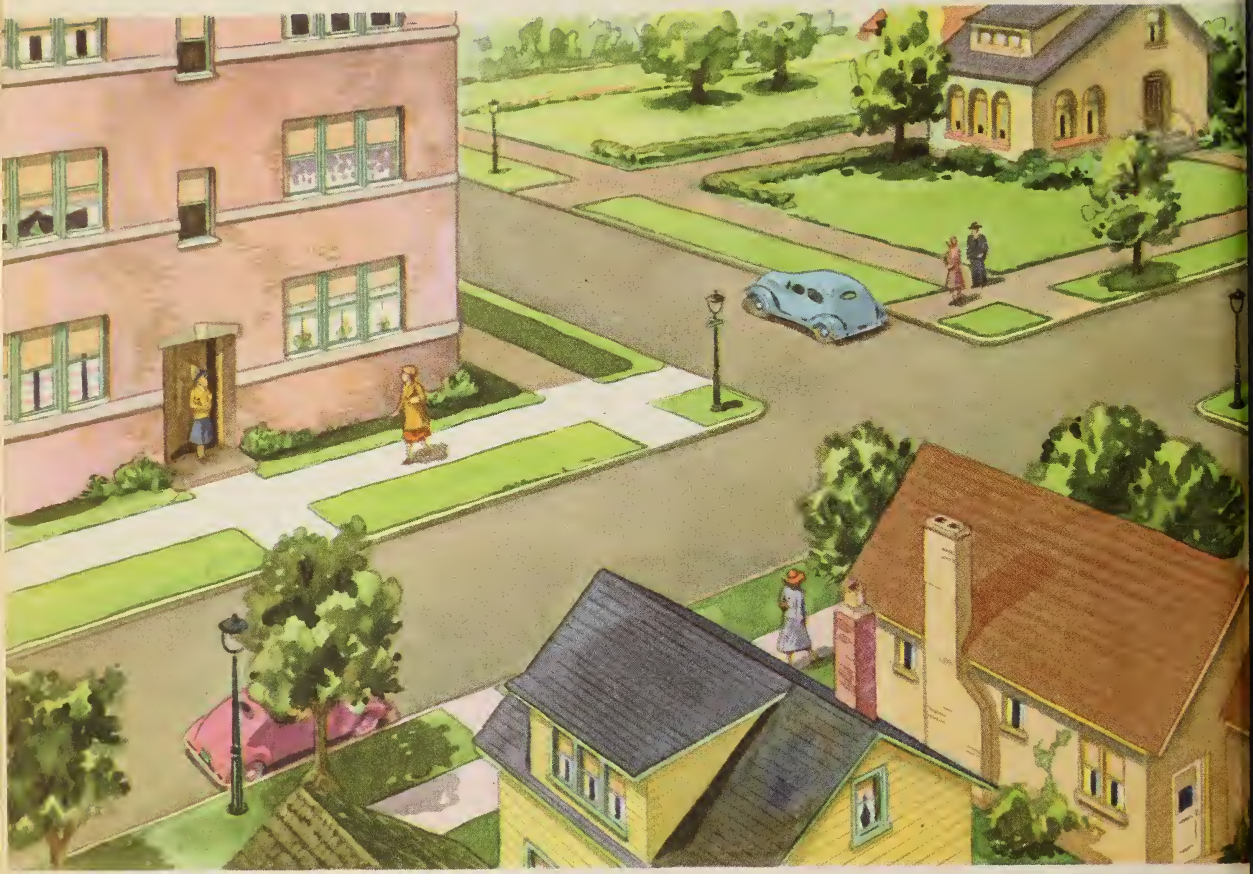


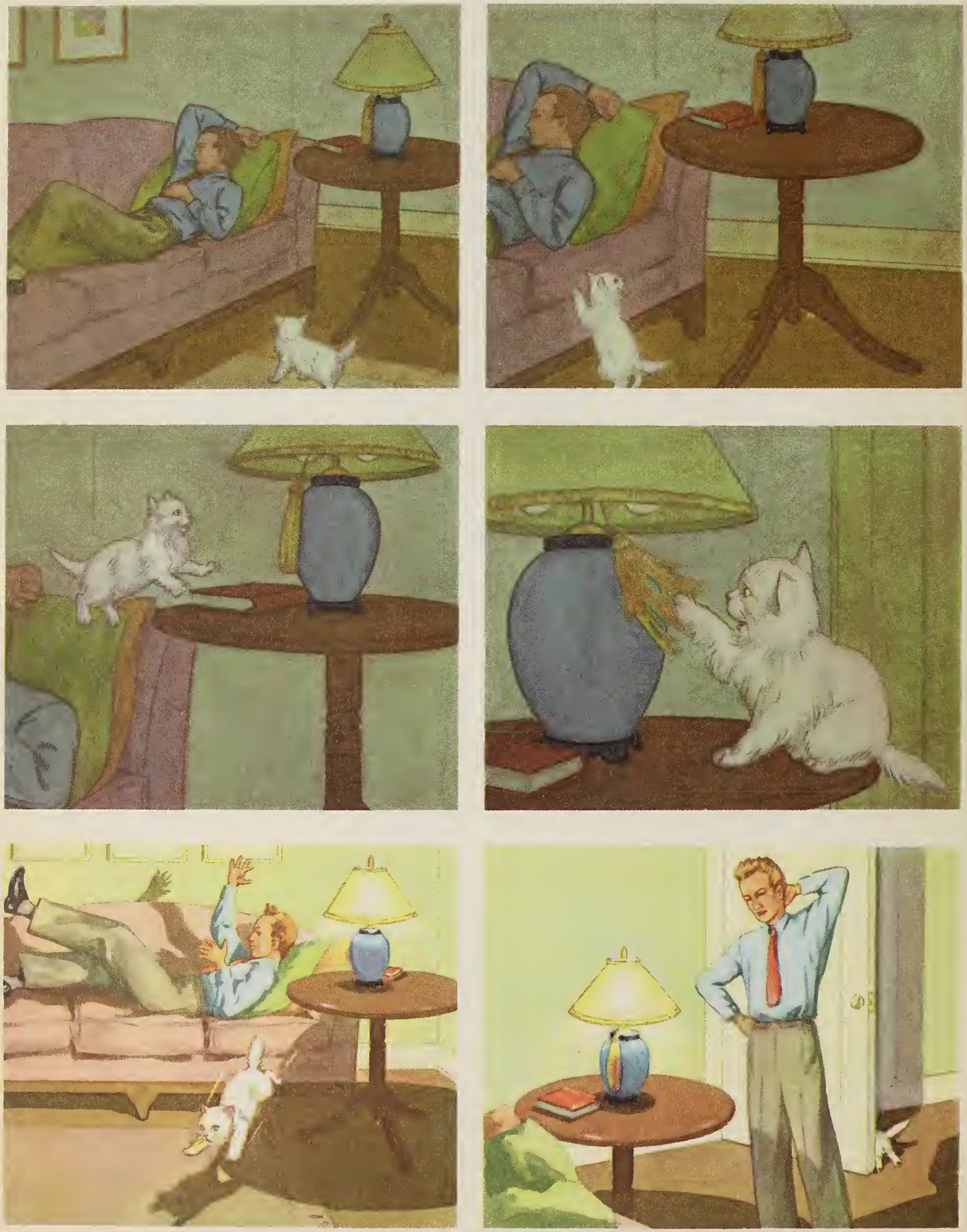
Homes for People



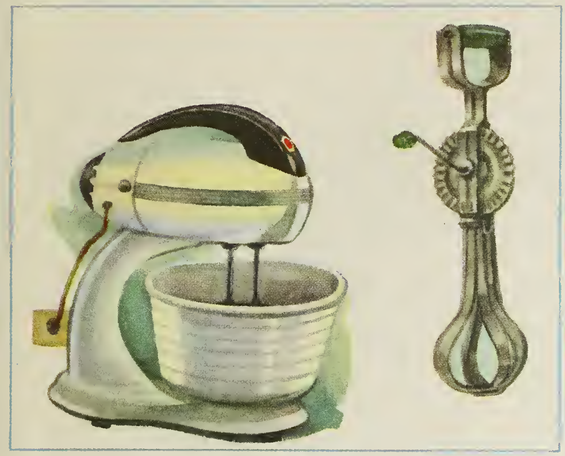
Homes for Animals

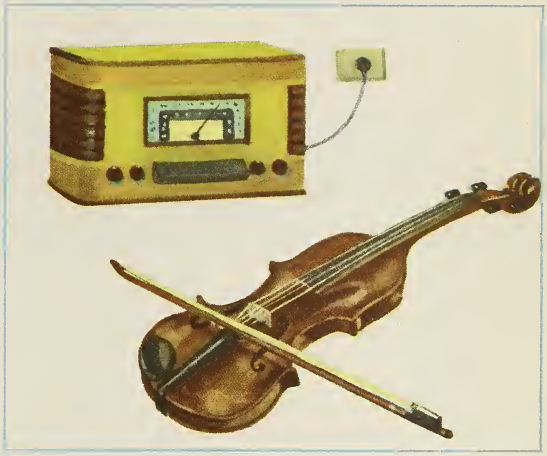
Machines

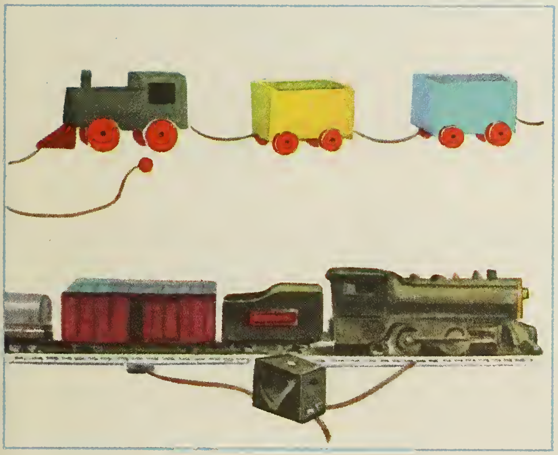
Who Did It?

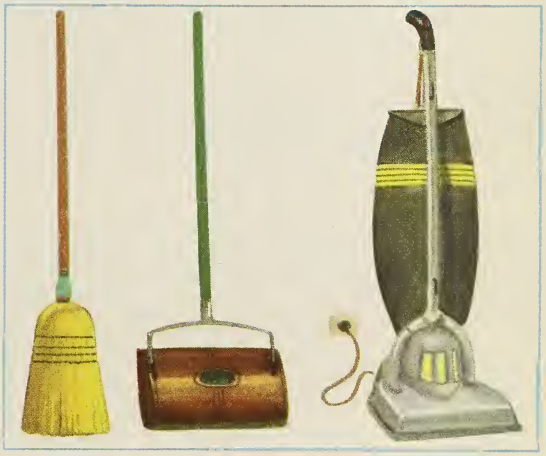


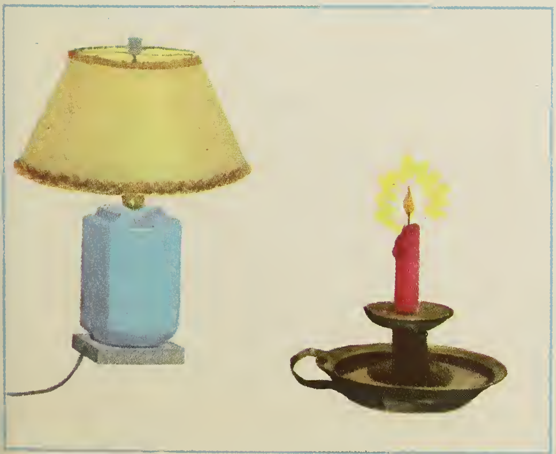
Must It Be Turned On?

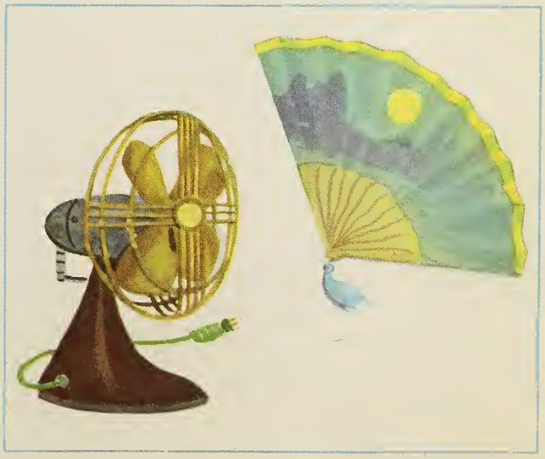




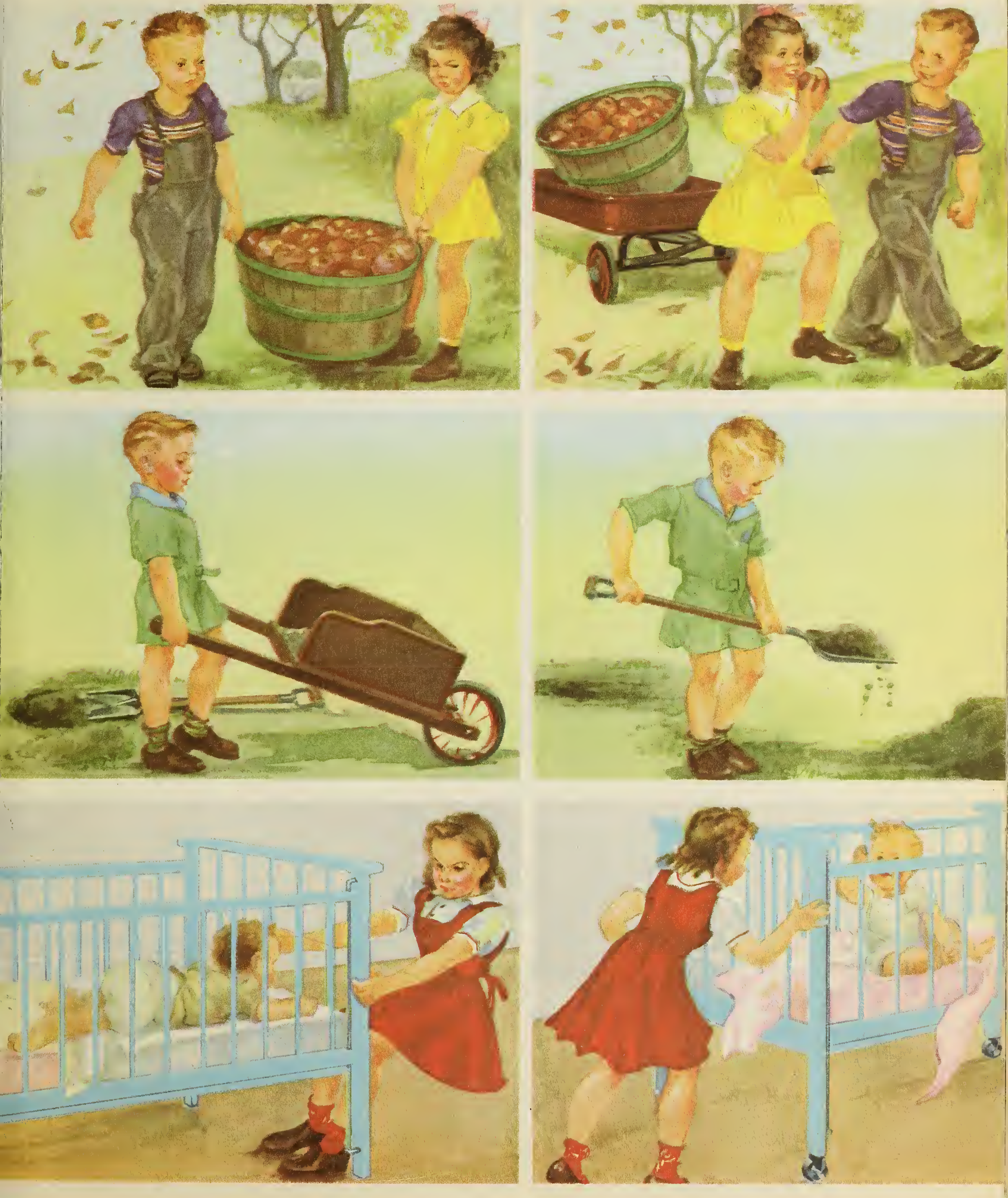








Find the Easy Way



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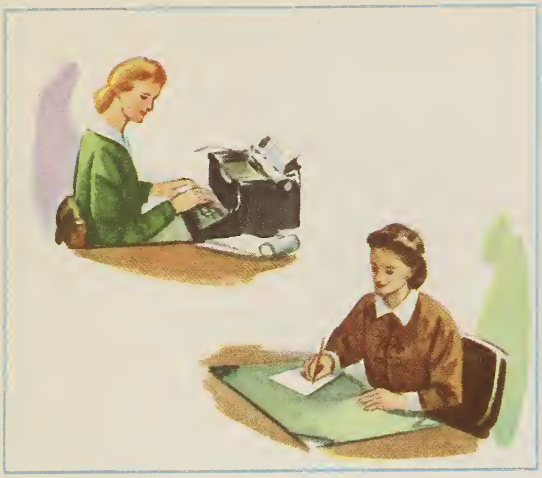
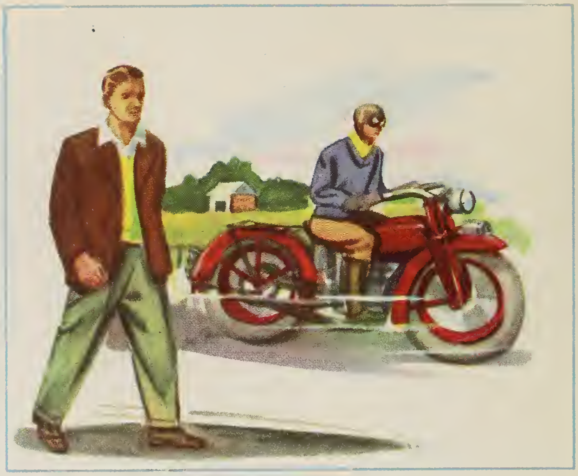
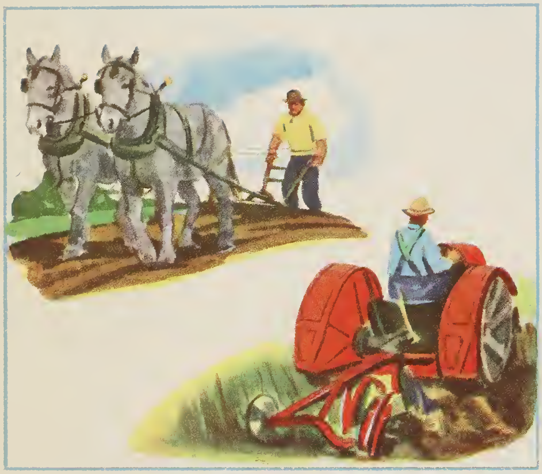
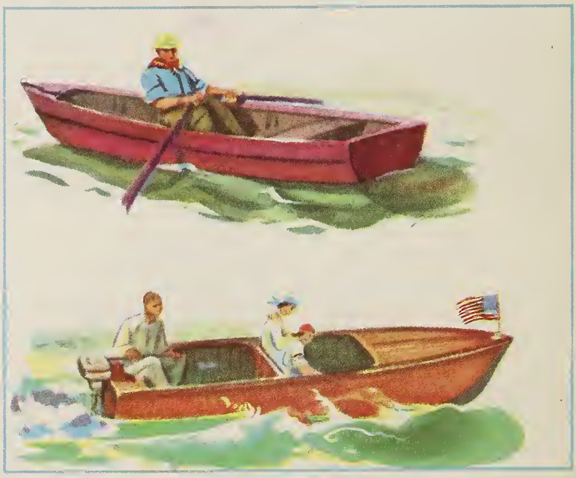
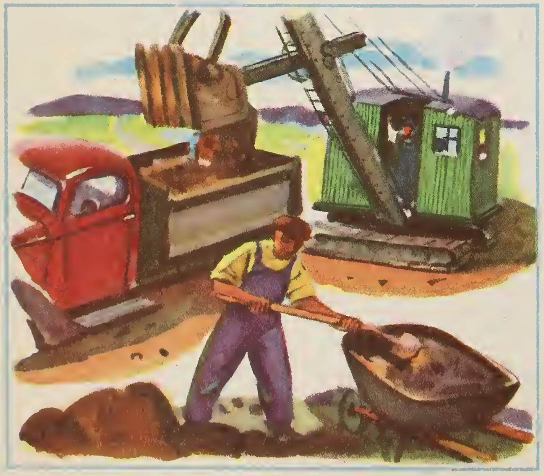
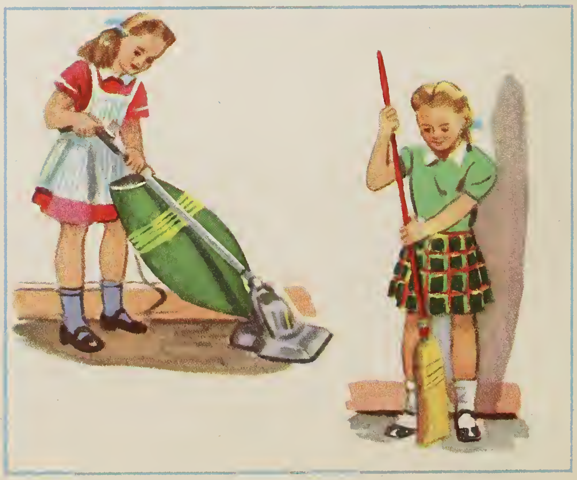




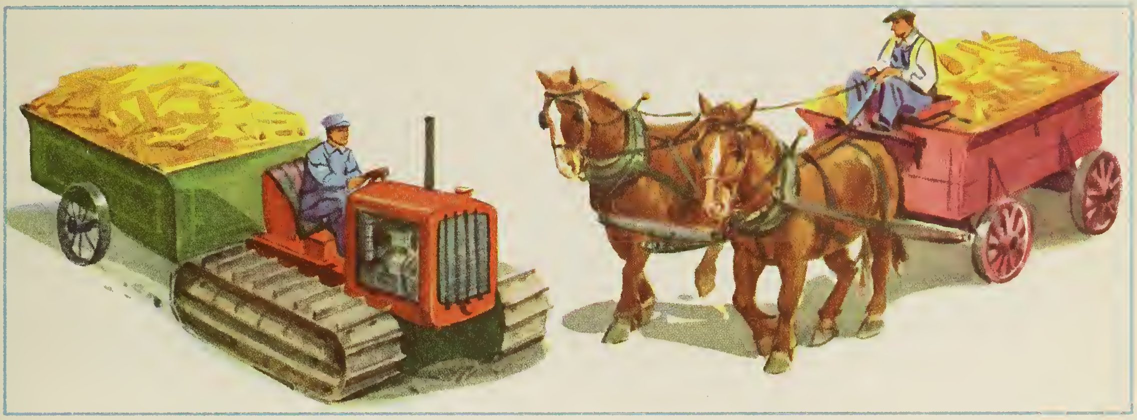


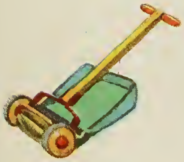


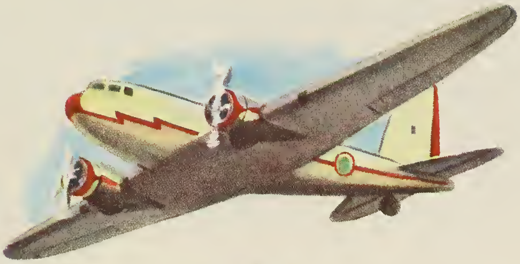


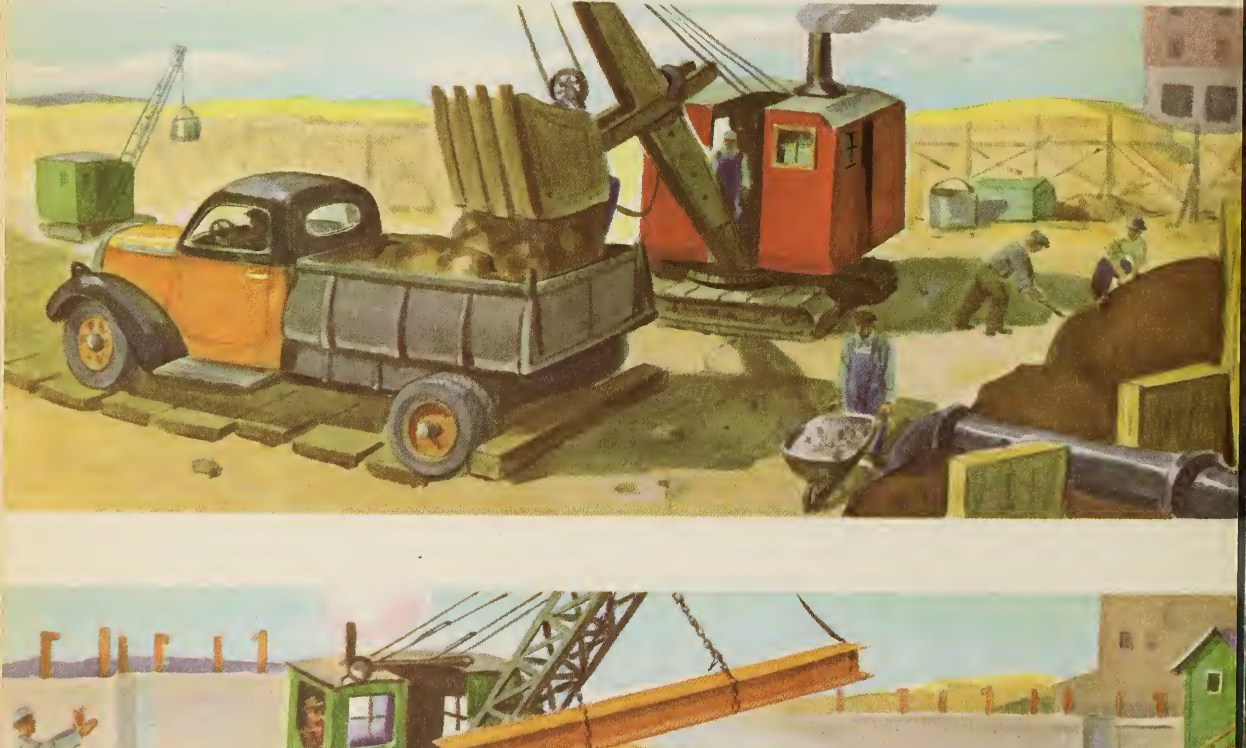


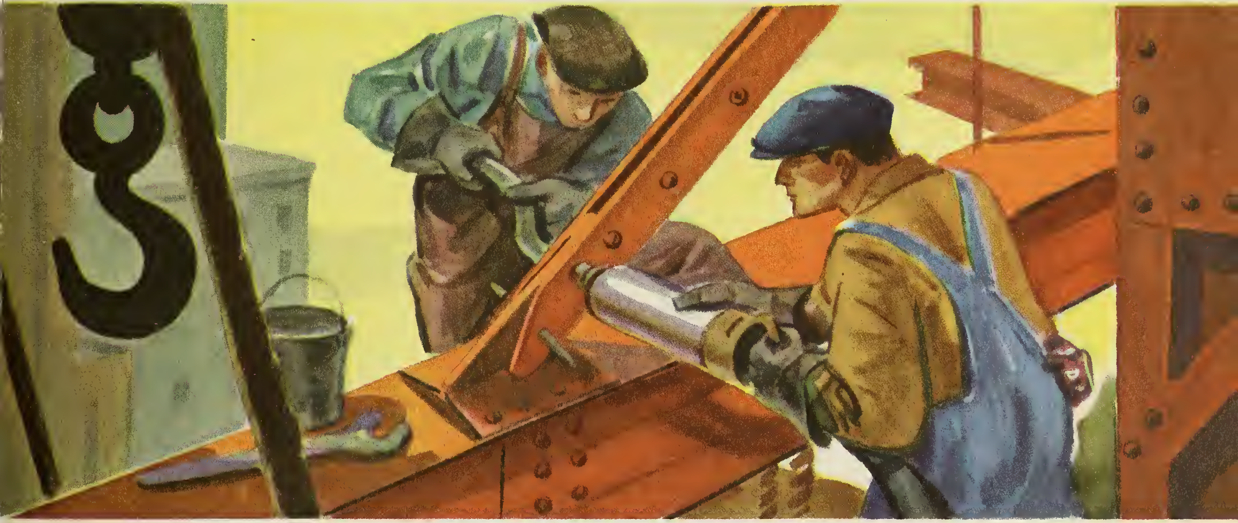
Machines with Engines

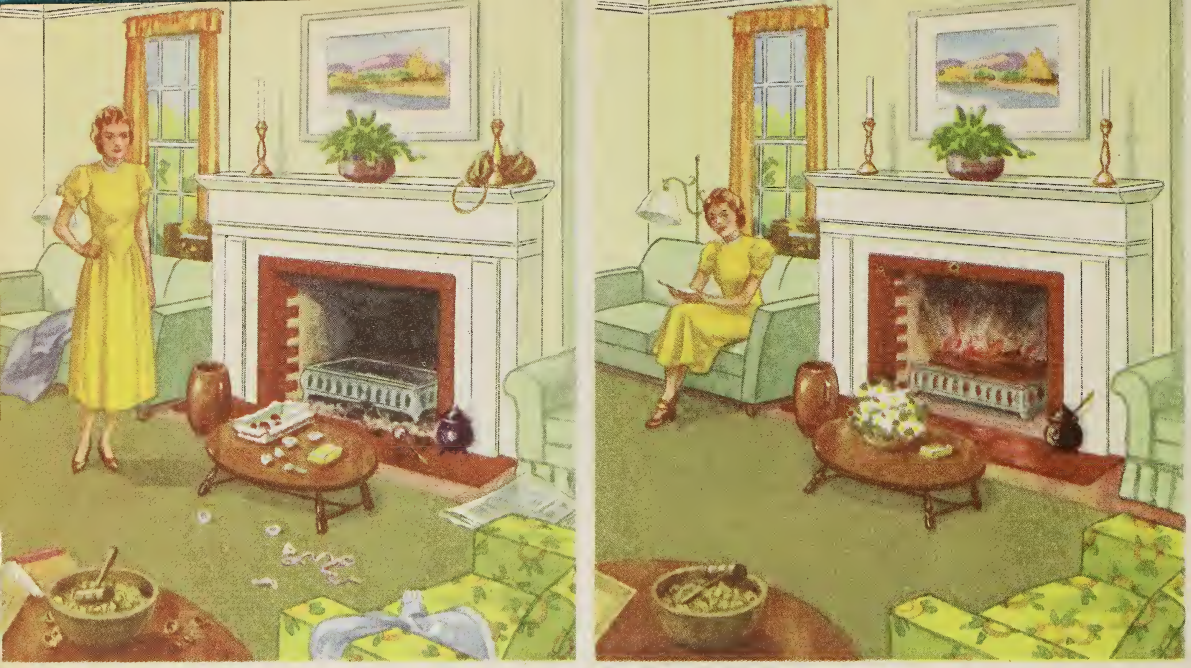




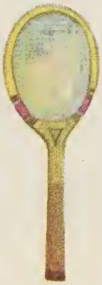


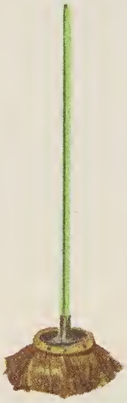


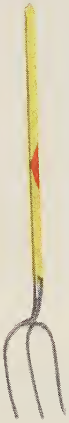


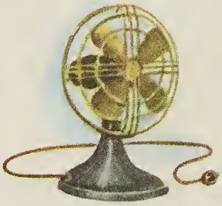


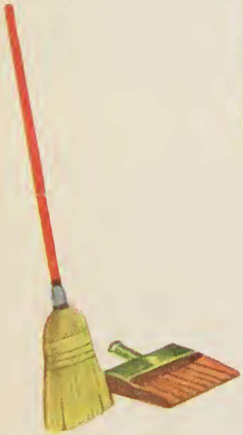
Which Things Could She Use?

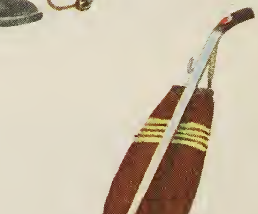


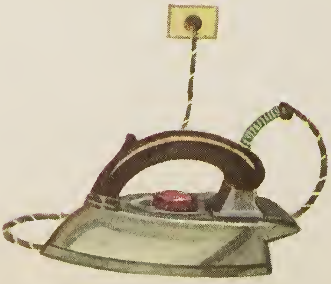


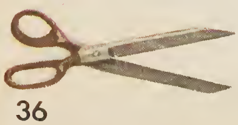


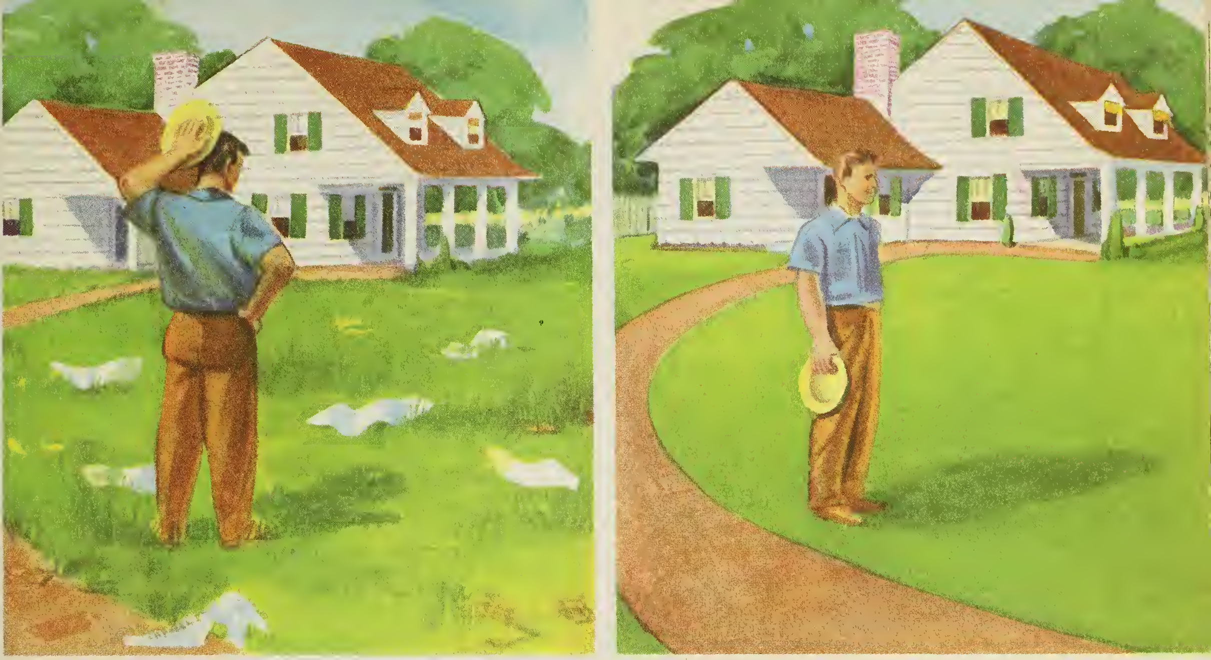




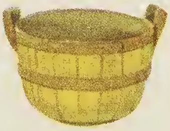


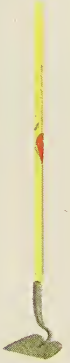


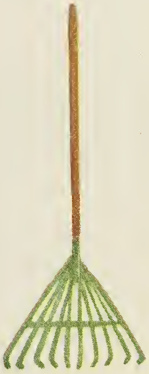


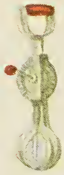


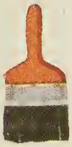
Which Things Could He Use?

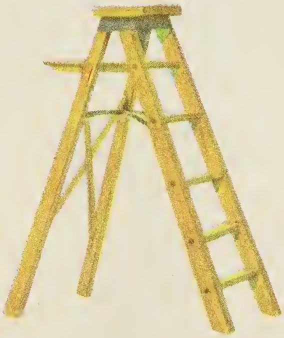


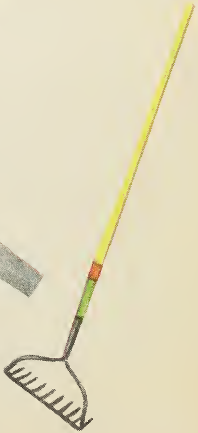


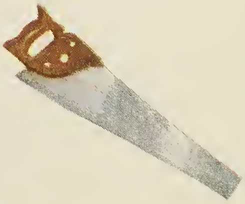


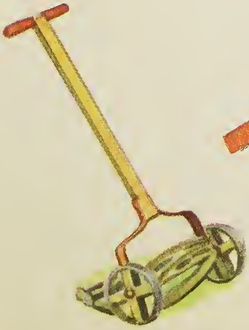


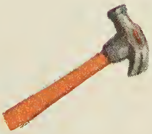


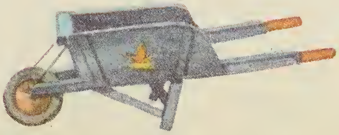


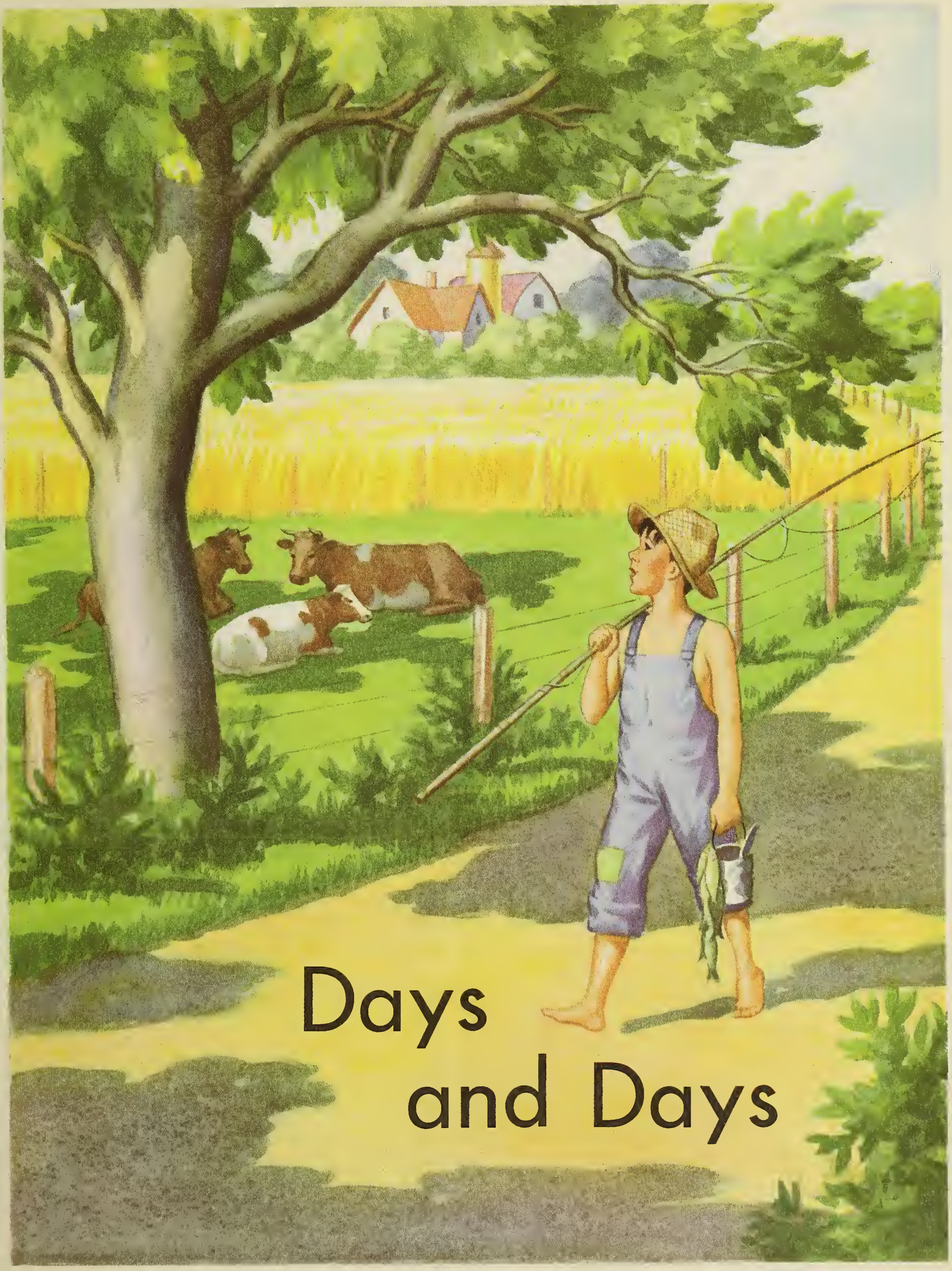






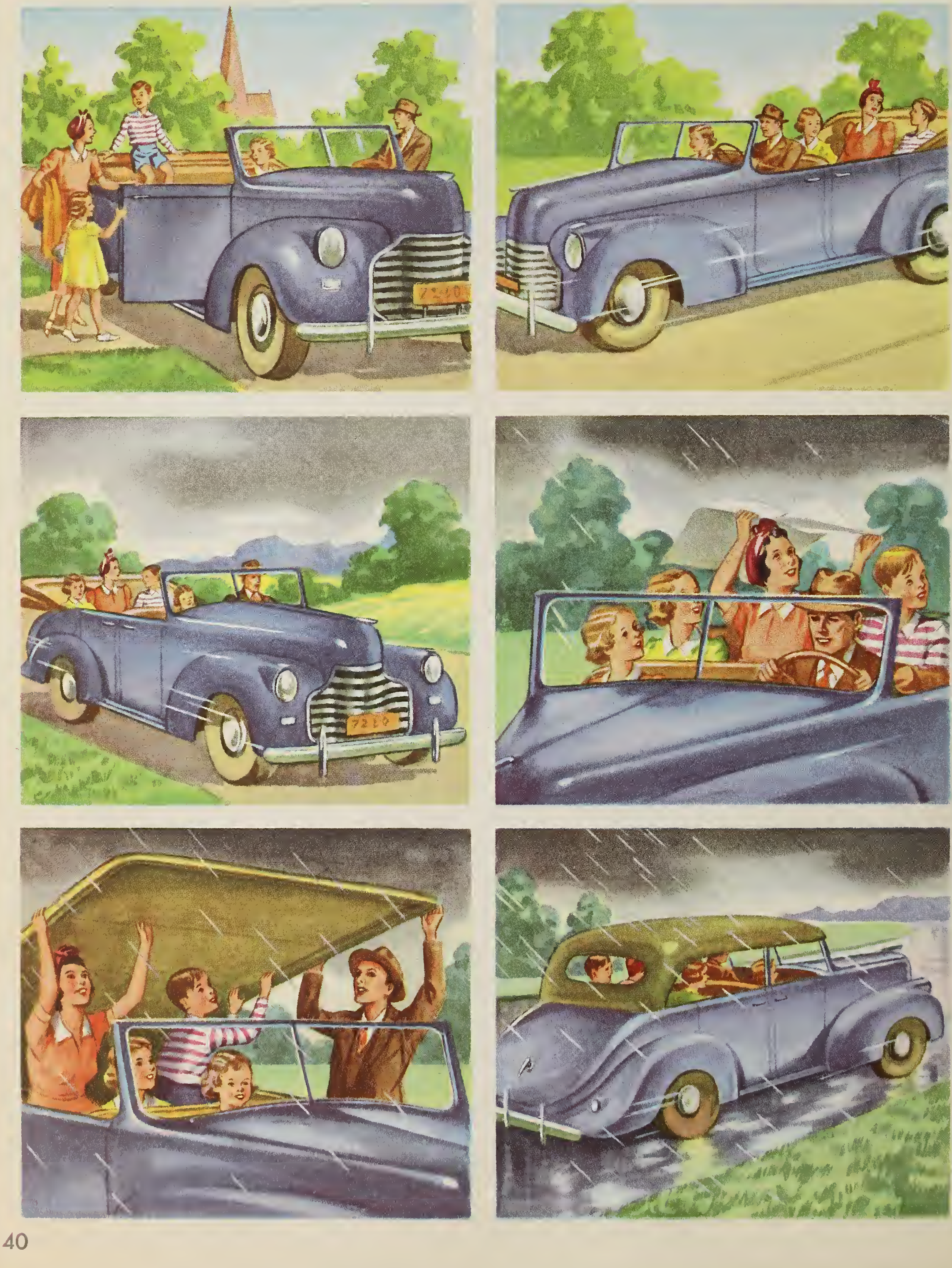




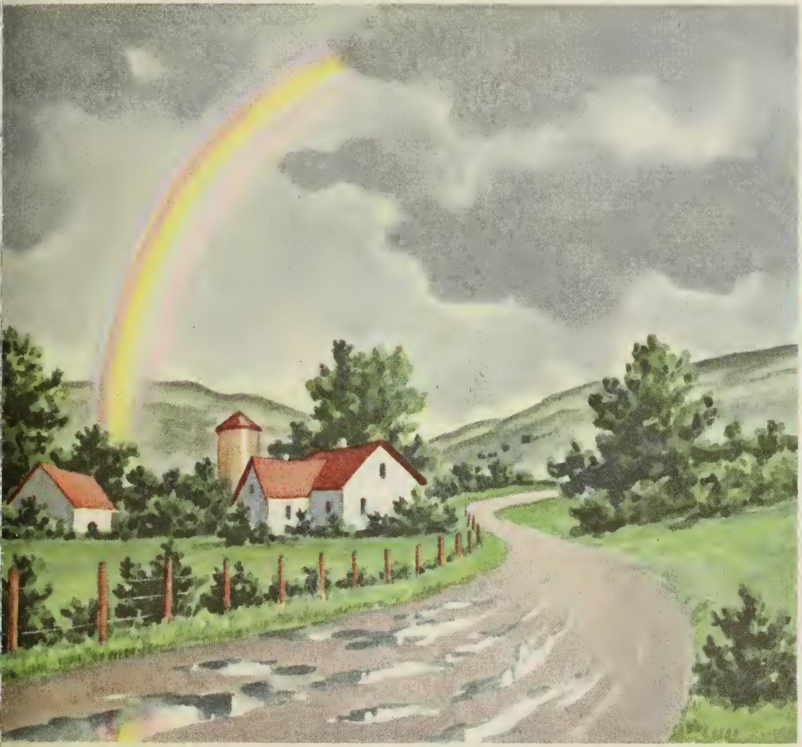


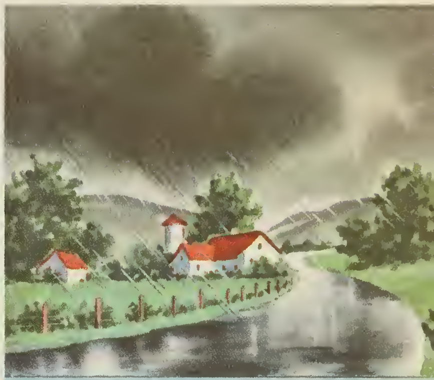
Days and Days

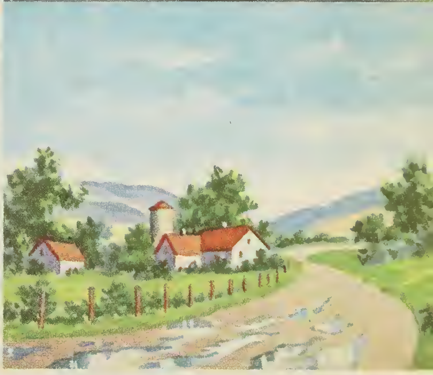
The Rainstorm

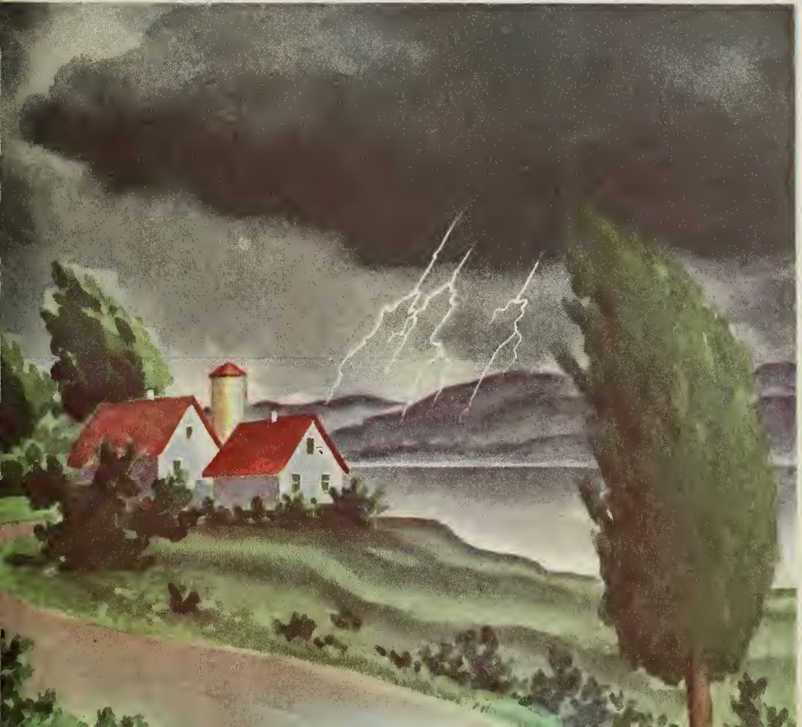


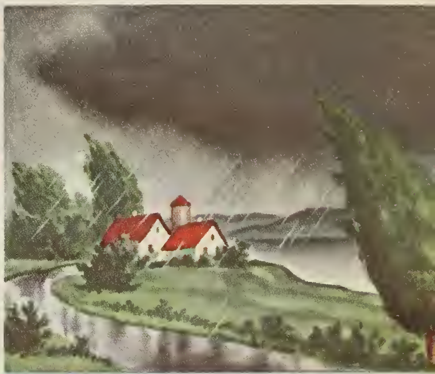
What Will Happen?

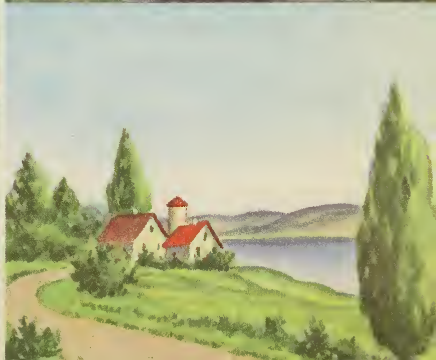












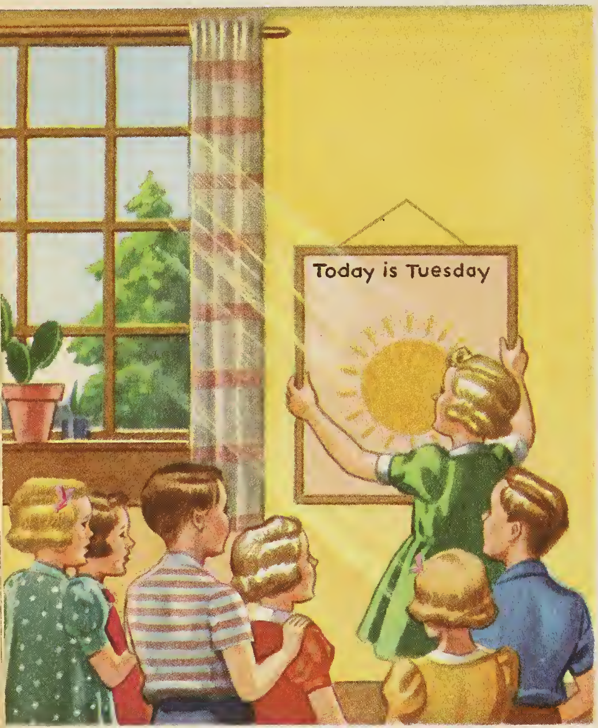
Rainy Days

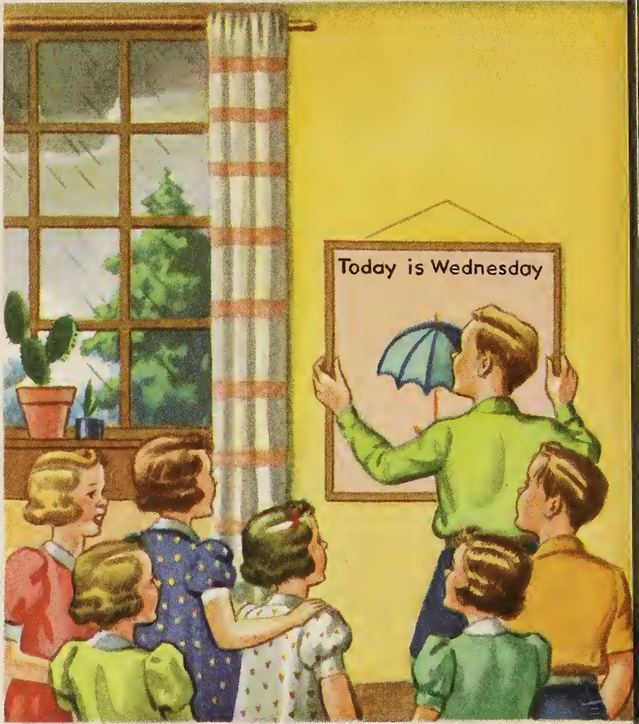
Sunny Days

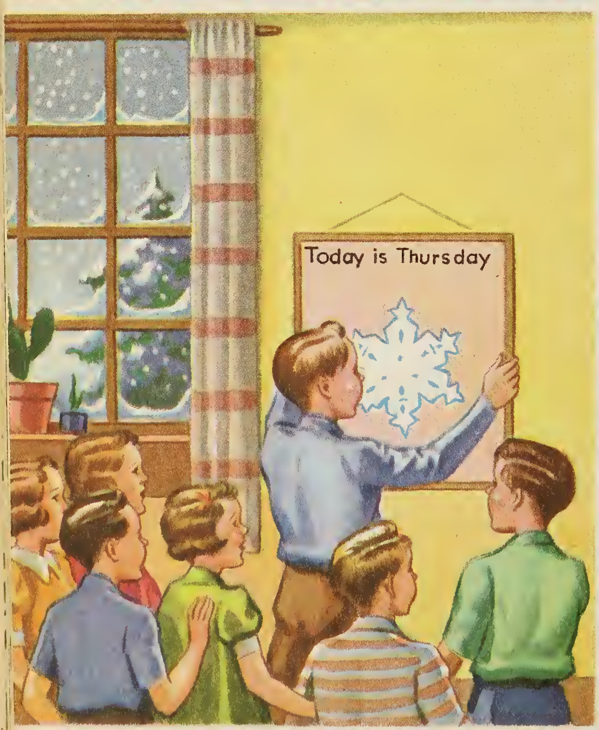
Windy Days

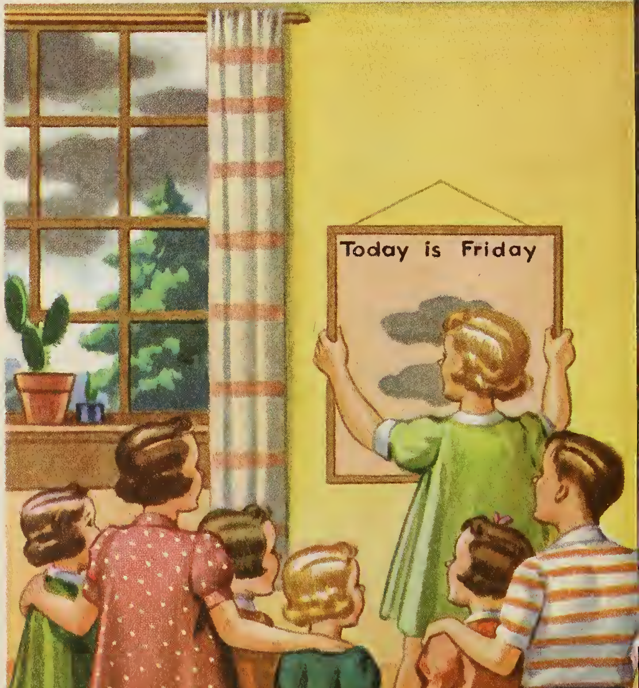
Cloudy Days

Weather Stories







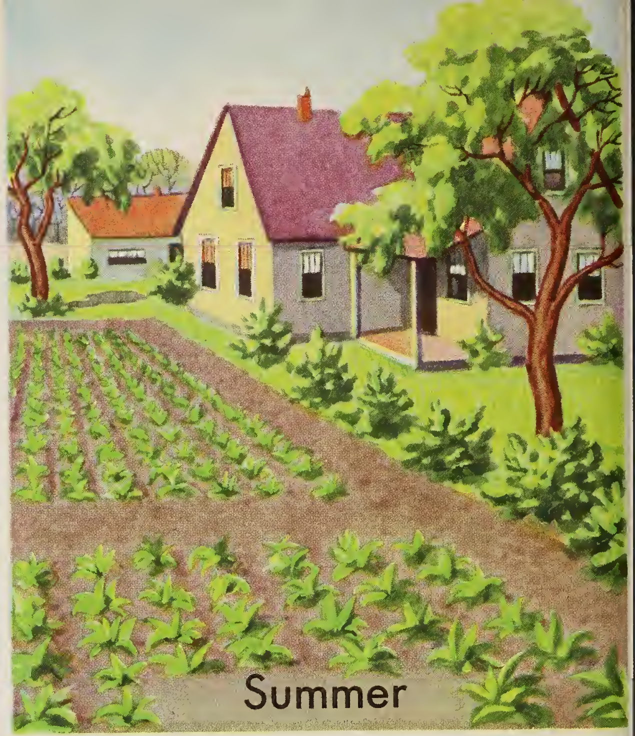


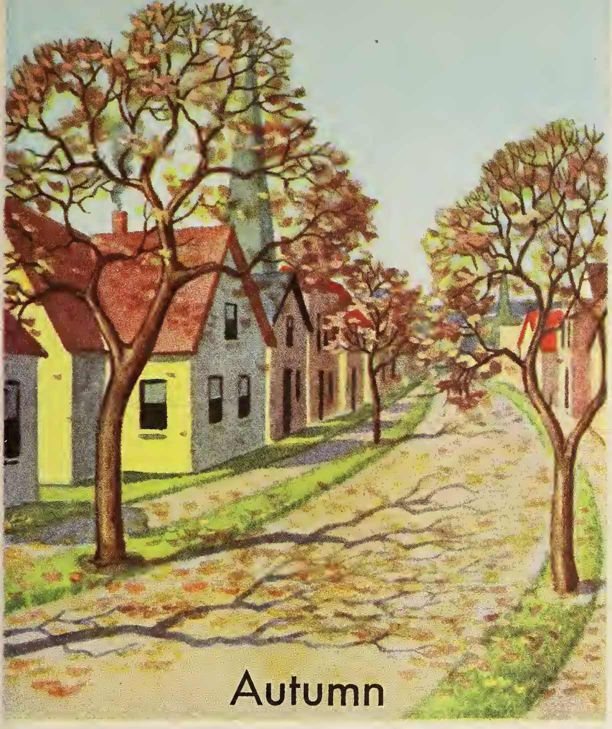
Our Weather Chart

MARCH

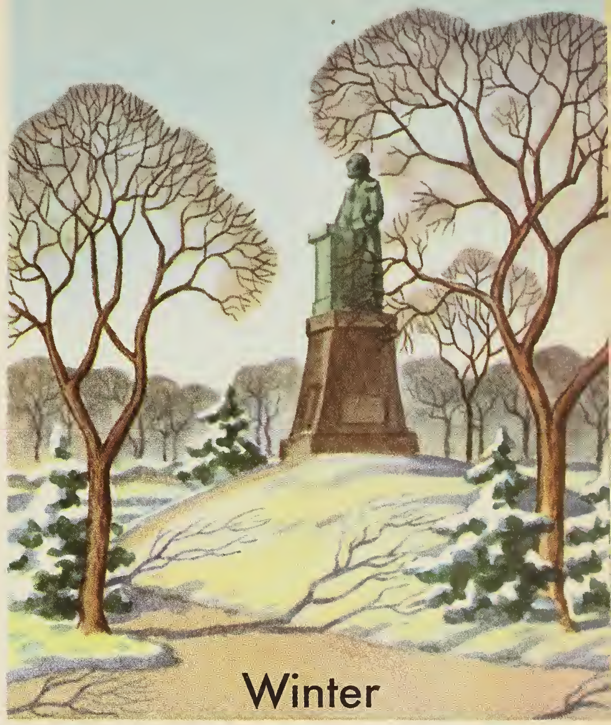
SUN	MON	TUE	WED	THU	FRI	SAT
	1 ☀	2 ☀	3 ☂	4 ❄	5 ☁	6 ❄
7 ☀	8 ☁	9 ❄	10 ☁	11 ☂	12 ☂	13 ☀
14 ☀	15 ☁	16 ☁	17 ☀	18 ☂	19 ☁	20 ☂
21 ☀	22 ☁	23 ☁	24 ☂	25 ☂	26 ☀	27 ☂
28 ☁	29 ☀	30 ☂	31 ☂			

Spring

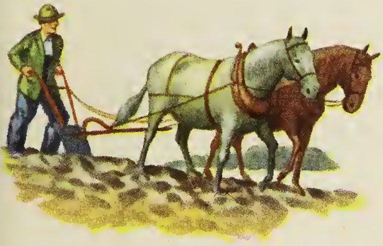

Summer



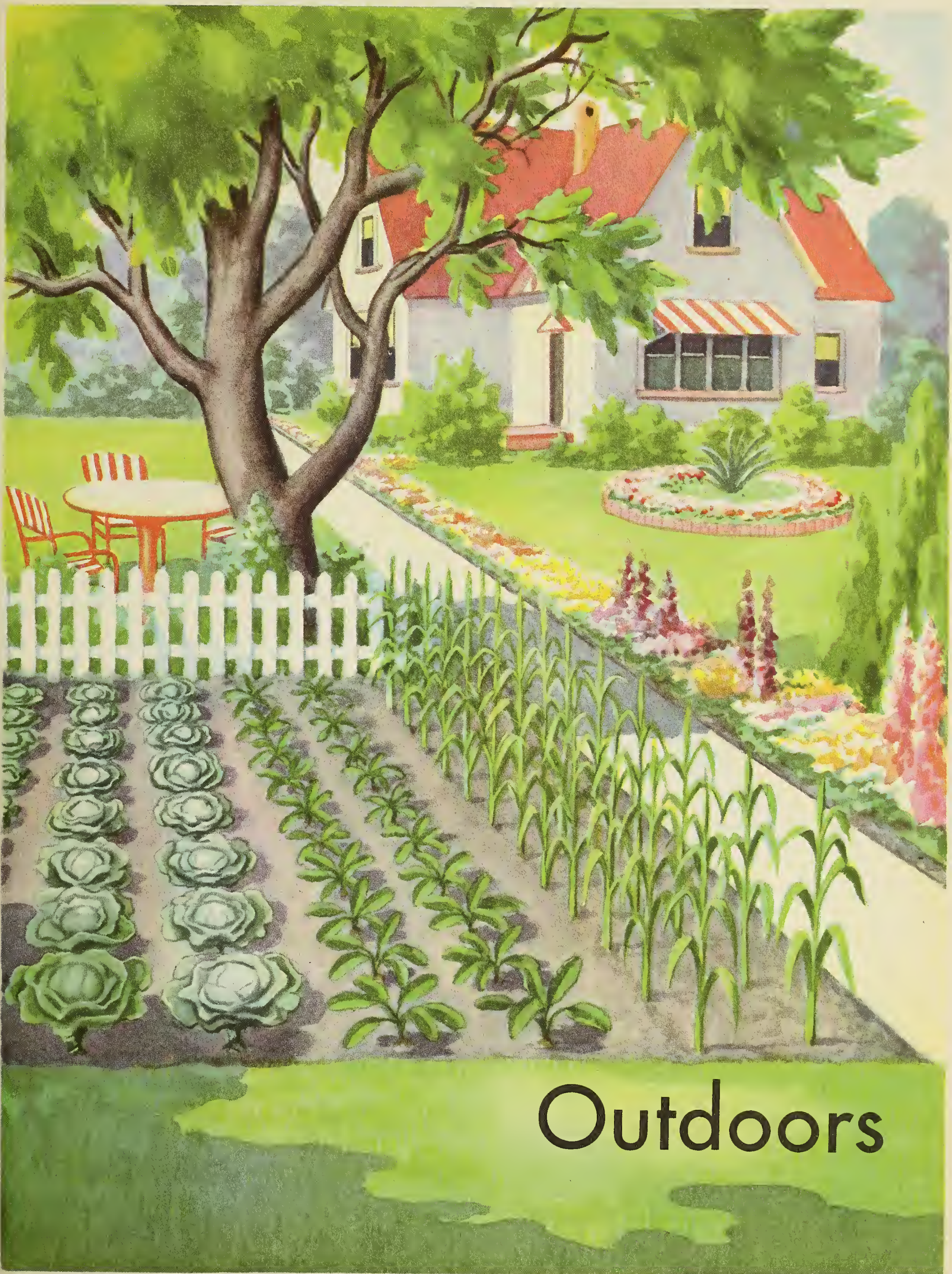
Autumn



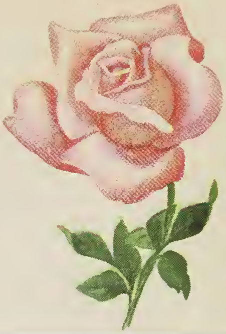
Winter

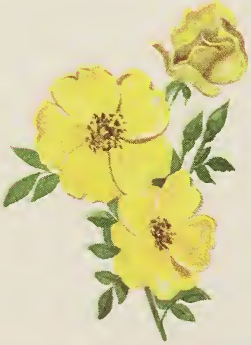


LIBRARY OF THE UNIVERSITY
OF ALBERTA

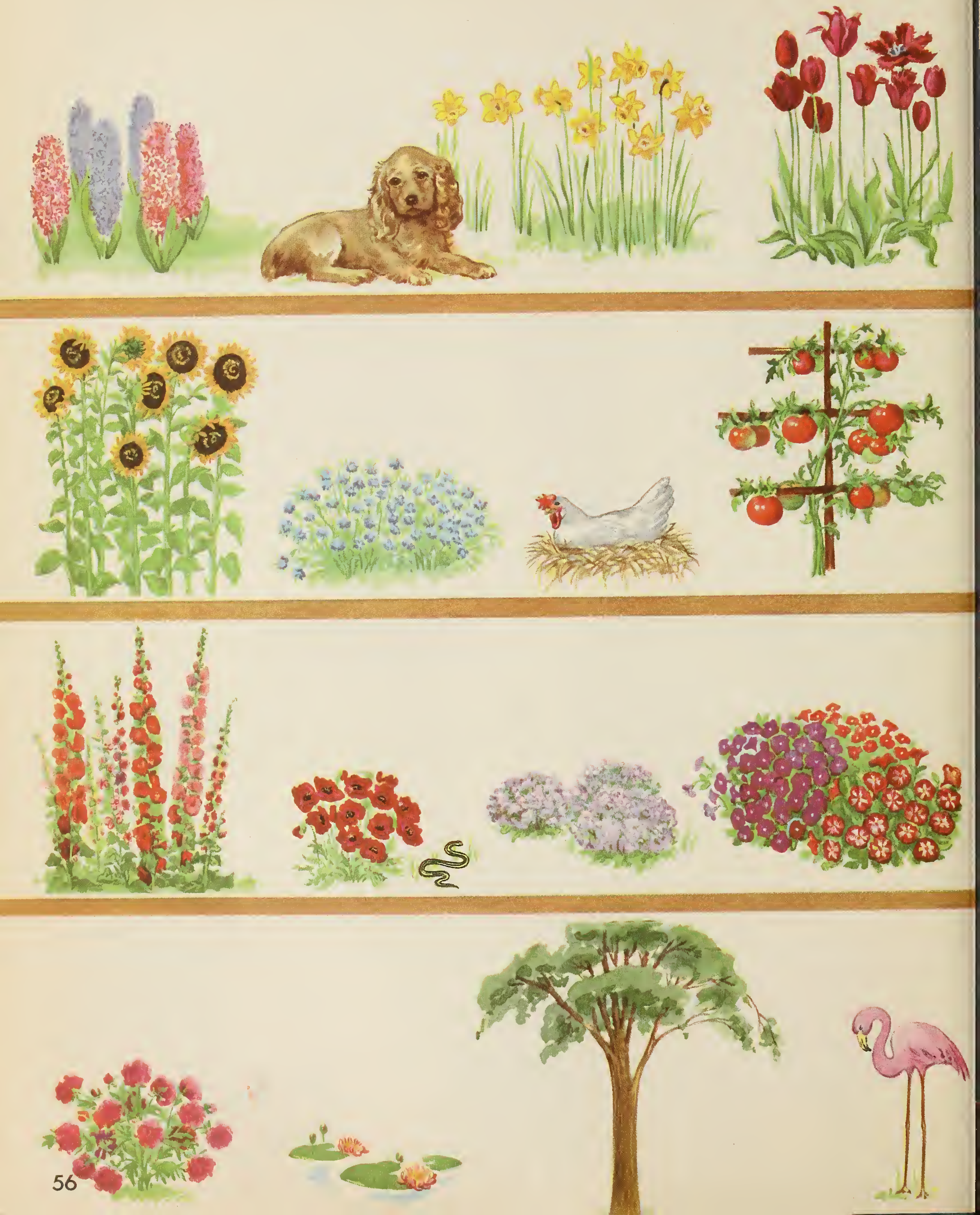


Outdoors

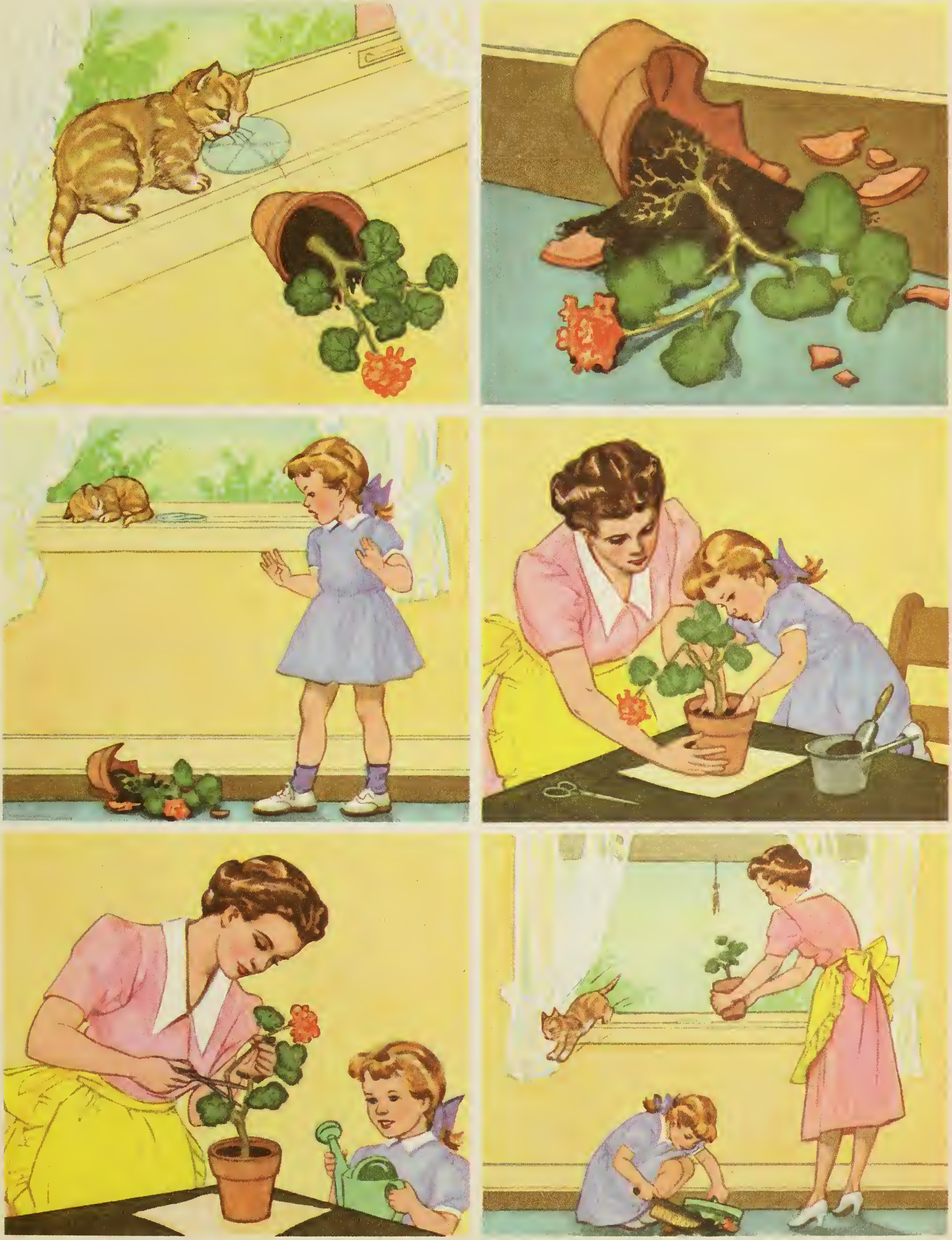




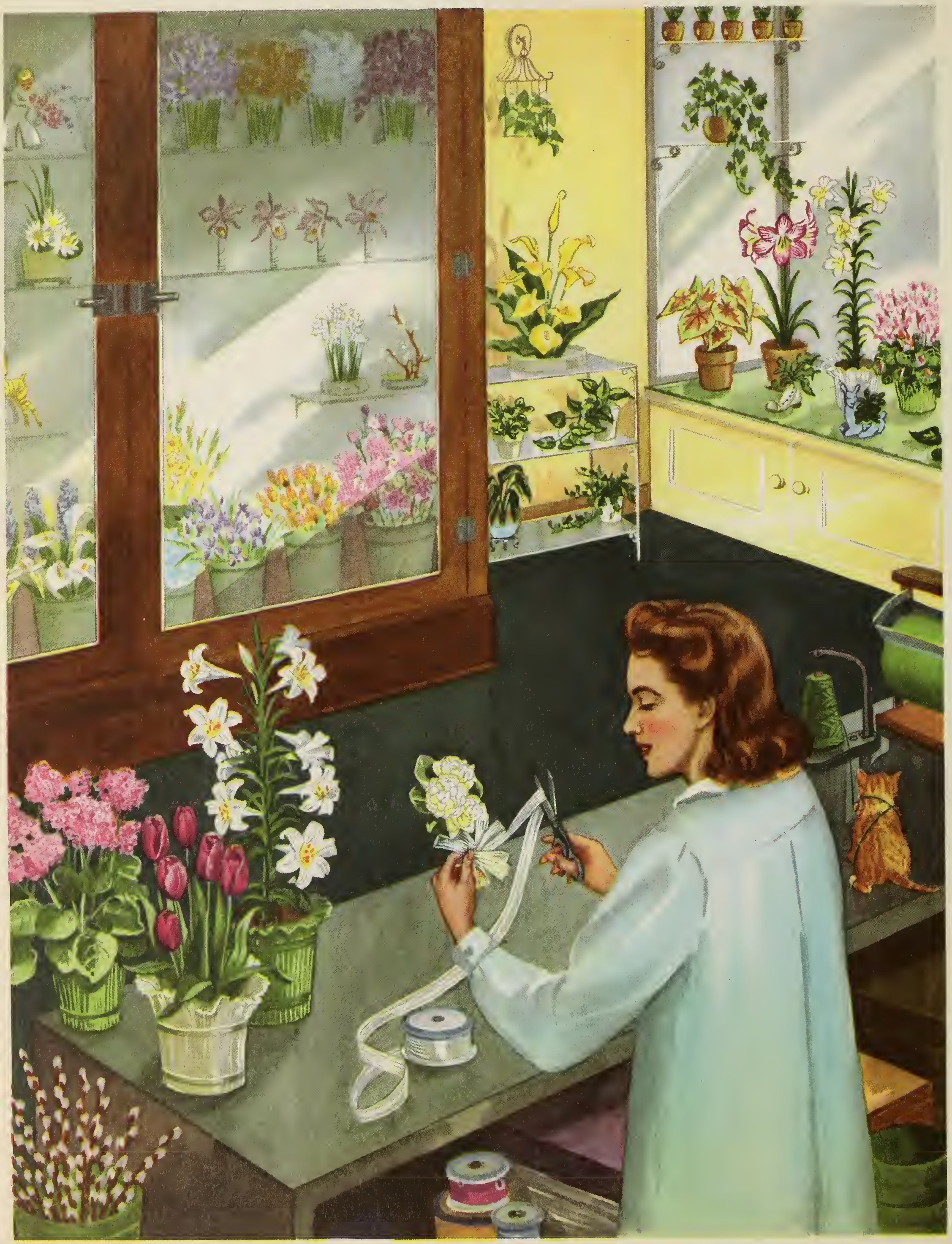
Plants and Animals



A Naughty Kitten



The Flower Shop

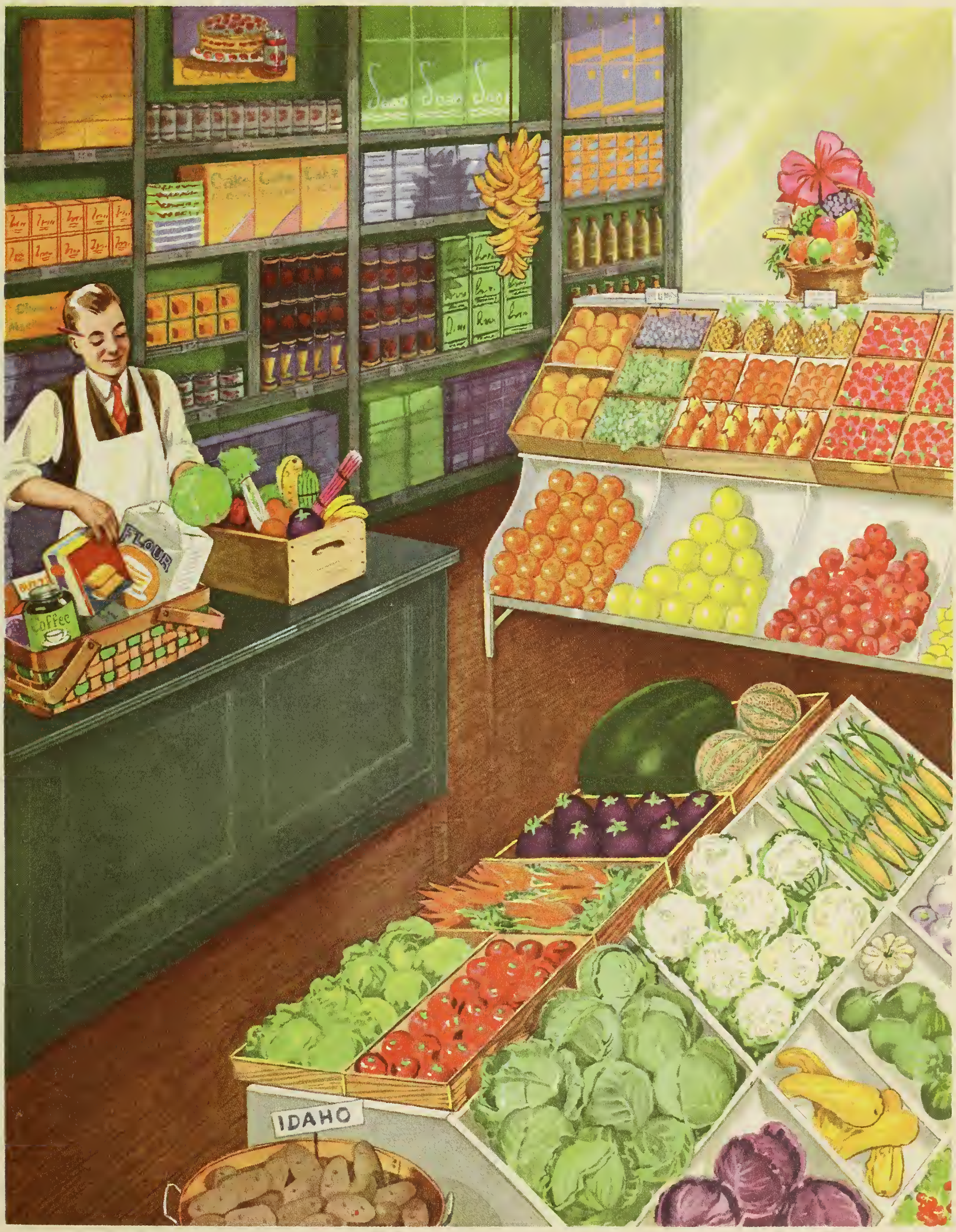


Tree Fun

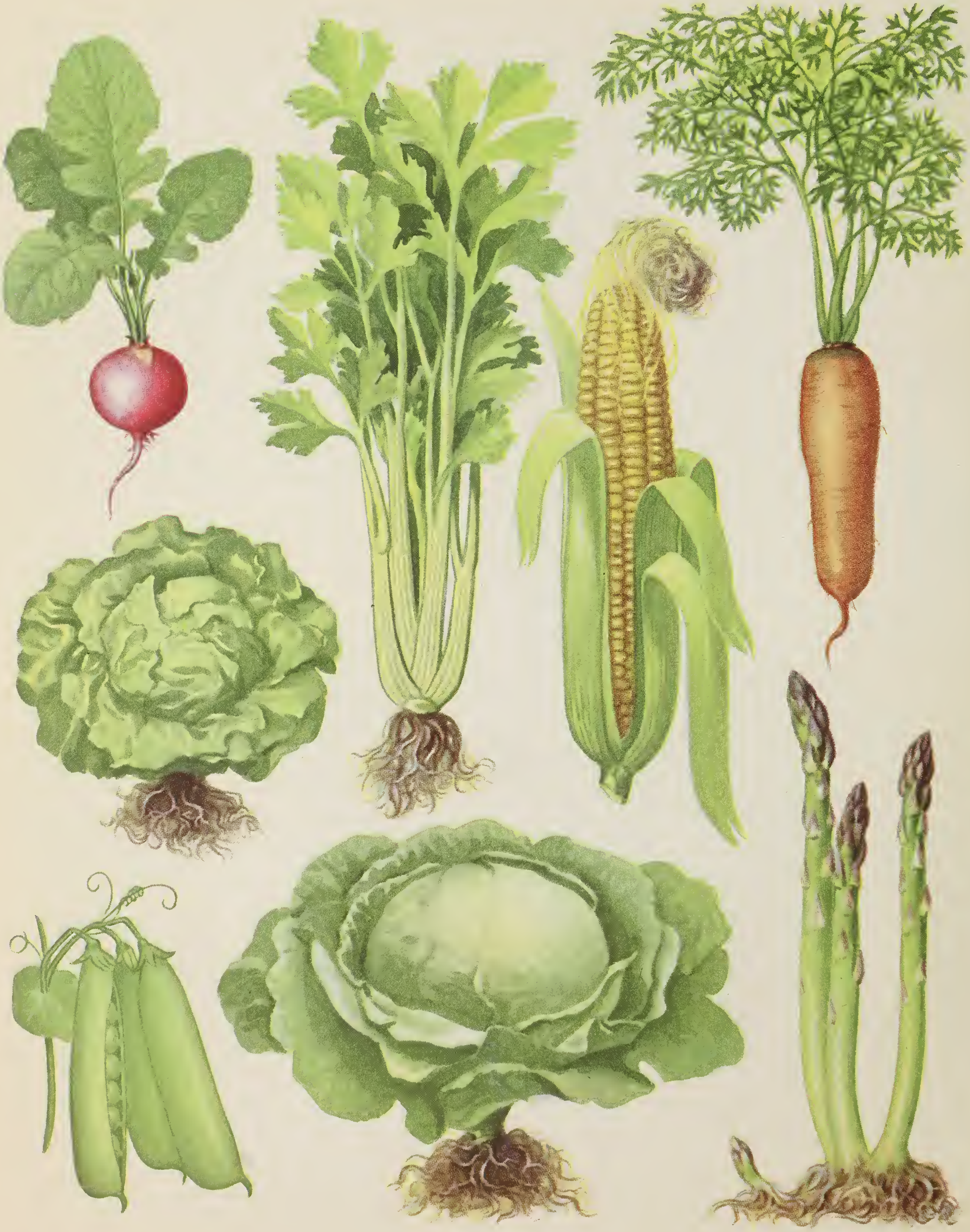
Shade Trees

Fruit Trees

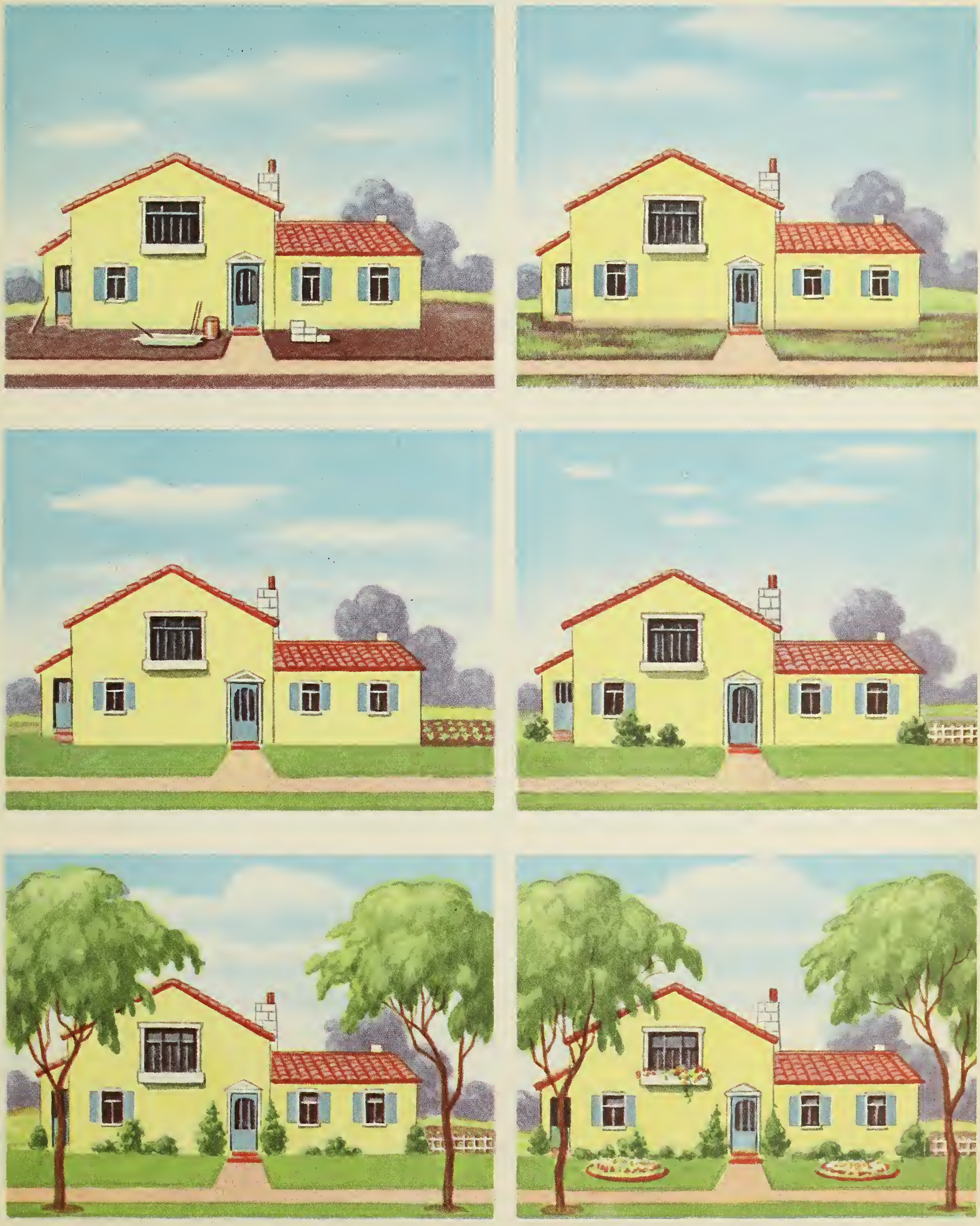
The Grocery Store



What Part Do We Eat?



A Home Grows Pretty



Index to Concepts

Pages in ***Look and Learn*** that promote readiness for a concept are printed in *italics* in the index that follows. Pages that present developmental treatment of a concept are printed in **boldface**. Pages that provide for extension, enrichment, and application of concepts are printed in roman type. For example, pages 3 to *13* introduce the concept that animals can move about; page **14** presents the first detailed treatment of the concept and pages 15, 16, 17, 18, 19, 20, 21 provide opportunity for further clarification, extension, and application of the concept.

UNIT I: Animals

A. There are many kinds of animals.
  1. Animals have definite physical characteristics by which one can be distinguished from another. Pages 3, *4-5*, **6**, **7**, 8, 9, 10, 11, 13.
     a. They may differ in color and marking. Pages *4-5*, *6*, **7**, 8-9, 10, 11, 14, 20.
     b. They may differ in general shape and size of body. Pages *4-5*, **6**, 8, 9, 10, 11, 14, 20.
     c. They may differ in body covering. Pages *4-5*, **6**, **7**, 8, 9, 10, 14, 20.
  2. Species within a family have characteristics which are alike for every member of the family. Pages *4-5*, **8-9**, 12.
  3. Most baby animals are more like their parents than like other animals and the resemblance increases as the baby animals grow older. Pages 3, **10**, 11, 12, 13, 19.

B. Animals live in various environments.
  1. Some animals live on land. Pages 3, *4-5*, 8-9, *14*, *15*, **16**, 17, 18, 19, 20, 21, 22, 23.
  2. Some animals live in water. Pages 9, *14*, **16**, 17, 19.
  3. Some animals live on land and can fly. Pages 3, 8-9, *14*, **16**, 17, 19, 20, 21, 22.
  4. Some animals live both on land and in water. Pages 3, *4-5*, 9, *15*, **16**, 17.

C. Animals carry on activities to keep alive.
  1. Animals can move about. Pages 3, *4-5*, *6*, *7*, 8-9, *10*, *11*, *13*, **14**, 15, 16, 17, 18, 19, 20, 21.
     a. Some animals can walk, hop, or run. Pages 3, *4-5*, *6*, *7*, 8-9, *10*, *11*, *13*, **14**, 15, 16, 17, 18, 19, 20, 21.
     b. Some animals can crawl. Pages *7*, 9, **14**.
     c. Some animals can swim. Pages 3, *4-5*, **14**, 15, 16, 17, 19, 21.
     d. Some animals can fly. Pages 3, *6*, *7*, 8-9, **14**, 15, 16, 17, 19, 20, 21.
     e. Some animals can use two or more methods of locomotion. Pages 3, *4-5*, 8-9, *10*, *13*, **14**, 15, 16, 17, 19, 20, 21.
  2. Most animals find or build homes. Pages *10*, *13*, *19*, **22-23**.
     a. Most birds make nests. Pages *10*, *13*, *19*, **22**.
     b. Some animals make colony homes. Page **22**.
     c. Man must provide shelter for domesticated animals. Pages *11*, *16*, *21*, **23**.

3. Animals must have food to live and grow. Pages *6, 10, 11, 12, 13, 15, 16, 17,* **18,** 19, 20, 21.
    a. Animals change in size, appearance, and ability to do things as they grow. Pages *10,* **11,** 12, 13, 19.
    b. Wild animals find food in the environment. Pages *10, 13, 15, 17,* **18,** 19, 20, 21, 68, 69.
    c. Animals that are domesticated by man must be fed by him. Pages *6, 11,* **21,** 23, 68.

D. Man uses animals for various purposes.
  1. Some animals provide pleasant companionship. Pages *4-5, 6, 7, 11, 13,* **21,** 23, 28, 38.
  2. Some animals provide man with food or clothing. Pages *23,* **24.**
  3. Some animals assist man in his work. Pages *5,* **23,** 32, 33, 51.
  4. Some wild animals are confined in order to provide opportunities to observe and study them. Page **23.**

UNIT II: Machines

A. A machine is any implement or device that aids in doing work.
  1. Some machines help us to do work with a minimum of muscular energy. Pages *25, 26, 27, 29,* **30,** 31, 32, 33, 34-35, 36-37, 38.
  2. Some machines help us to work rapidly. Pages *25, 26, 27, 29, 30, 31,* **32,** 33, 34-35, 36-37.
  3. Engine-run machines have greater power than man or animal-run machines. Pages *25, 26, 27, 29, 32,* **33,** 34-35, 36.
    a. Engine-run machines can move heavier loads. Pages **33,** 34-35.
    b. Engine-run machines can do work more quickly. Pages **32,** 33, 34-35, 36.
    c. Engine-run machines can do more work in a given period of time. Pages *32,* **33,** 34-35, 36.
  4. Machines and tools are valuable only in so far as they are intelligently chosen and manipulated to solve a problem. Pages *29,* **34-35,** 36-37, 38.

B. Electricity is a source of power.
  1. It provides light in our homes. Pages *25,* **26,** 28, 29.
  2. It provides energy to run machines. Pages *25,* **26,** 27, 29, 36, 40.
  3. It provides energy to run systems of communication and transportation. Pages *25, 29, 32,* **33.**
  4. It provides an efficient source of power. Pages *25,* **26,** 27, 28, 36.
    a. Electrical devices are turned on and off. Pages *25, 26, 27,* **28,** 29, 36.
    b. Electricity is ready for instant use. Pages *25, 26, 27,* **28,** 29, 36.

UNIT III: Days and Days

A. There are many kinds of weather.
  1. Sun, rain, and wind are elements of weather. Pages 39, **40,** 41, 42, 43, 44-45, 46-47, 48-49, 50-51, 52.
  2. Weather combinations vary. Pages *40, 41, 42, 43,* **44-45,** 46-47.
  3. Weather changes often. Pages **40,** 41, 42, 43, 46-47.
  4. There are usually definite indications of weather changes and we are often able to predict weather on the basis of these. Pages **40,** 41, 42, 43, 44-45, 50-51.

B. Seasons have characteristic weather conditions.
   1. The seasons are summer, autumn, winter, spring. Pages *39, 40, 41, 42, 43, 44-45, 46,* **48-49**, 50-51, 52, 53, 58-59, 62, 68-69.
   2. Weather varies from season to season. Pages *39, 43, 44-45,* **48-49**, 50-51, 52, 58-59, 62, 68-69.
   3. Weather varies within a season. Pages *40, 41,* **42**, 43, 44-45, 46-47.

C. People adjust their activities and clothing to changes in weather and season. Pages *39,* **40**, 42, 43, 44-45, 46-47, 50-51, 52, 62, 68-69.

UNIT IV: Outdoors

A. There are many kinds of plants.
   1. Most common plants that we know have roots, stems, flowers, branches, and leaves and produce seeds. Pages *53, 54, 55,* **57**, 58-59, 62, 66.
   2. Plants have distinguishing features by which we can tell one from another. Pages *53,* **54**, *55, 56,* 60-61, 62, 63, 64, 66, 68-69.
      a. Flower or fruit color and size are common distinguishing features. Pages **54**, *55, 56, 57,* 60-61.
      b. Size, shape, and color of leaves are common distinguishing features. Pages *53,* **55**, *56,* 60-61, 62, 63, 64.
      c. General shape and size and growing habits may be distinguishing features. Pages *53, 54,* **55**, 60-61, 62, 63, 64, 65, 68-69.
      d. Plants are different from animals although both are alive. Pages *54,* **56**, 60-61, 68-69.

B. Plants grow and reproduce their kind.
   1. Many plants grow from seed. Pages **58-59**, 64, 66.
   2. Plants follow a definite pattern of growth. Pages *57,* **58-59**, 62, 63, 64.
   3. Seeds produce the same kind of plant as the parent plant. Pages **58-59**, 64, 66.

C. People and animals use plants in various ways.
   1. Some plants are used for food and clothing. Pages *53,* **64**, 65, 66, 68-69.
   2. Some plants provide man and animals with shelter. Pages *53, 62,* **63**, *67,* 68-69.
   3. Some plants provide aesthetic pleasure. Pages *53, 54, 55, 56, 57,* **60-61, 62**, *67,* 68-69.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 55 54 53 52 51 50 49

GUIDEBOOK FOR

Look and Learn

by WILBUR L. BEAUCHAMP, GERTRUDE CRAMPTON,

and WILLIAM S. GRAY, Reading Director

BASIC STUDIES IN SCIENCE: CURRICULUM FOUNDATION SERIES

Scott, Foresman and Company

CHICAGO ATLANTA DALLAS NEW YORK

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Introduction

Science in the First Year of School

One of the chief duties of the school is to stimulate and guide the all-round growth of the pupil. A fundamental aim of an adequate science program is to stimulate and guide the pupil in a constantly growing understanding of those forces, elements, materials, and living things which, together, form his everyday world.

There is an abundance of things to interest and challenge pupils—things to watch, things to investigate, things to do, and things to discuss. All the world lies before the child, to be explained and understood in its parts, and, more important still, understood in their interrelationships.

So great is the diversity, as well as the extent, of the natural environment that an organized plan of presentation is essential if the pupils are to grasp not merely facts but relationships as well.

A course in science must present information in an efficient manner. It must insure the mastery of basic understandings. But, to be really effective, it must foster intellectual skills and abilities necessary for scientific thinking: ability to observe accurately, ability to perceive likenesses and differences, ability to compare, ability to infer, ability to generalize, and ability to understand and use an oral science vocabulary. *Look and Learn* and the *Teacher's Guidebook* have been carefully planned to promote development of these skills.

A course in science may be considered successful only if it so affects the pupil that he maintains a true scientific attitude toward his total environment. Such an attitude leads to the following habits: accuracy in observation and report, intellectual honesty, open-mindedness, suspended judgment, and seeing relationships.

The purpose of *Look and Learn* is to present examples from the environment that will lead the pupil to see relationships and help him organize his thinking. *Look and Learn* is the first step in a program which helps the pupil to an understanding of the principles and laws of science.

Areas of Interest

In *Look and Learn* four broad centers, or areas, of pupil interest—animals, machines, weather, and plants—provide a framework upon which the pupil organizes his knowledge and provide a basis for further exploration. This broad plan of organization leads to systematic understandings rather than to massed, unrelated factual information. (For a detailed list of concepts presented in *Look and Learn*, see the Index to Concepts, pages 71-72 of *Look and Learn*.)

The scientific content of these broad centers of interest in *Look and Learn* has been determined by three types of analysis:

1. An analysis of the environment to determine the problems of living that are dependent upon science for intelligent solution.
2. An analysis of these problems to determine the principles and concepts of science which provide solutions; and the age and grade level of the child at which these principles and concepts may be developed experientially and scientifically.
3. An analysis of these principles and concepts to provide the basic experiences upon which learning must be based.

Little of the actual content of *Look and Learn* is new or strange to the pupils, and gaps in a pupil's background can usually be filled in quickly and efficiently. For example, few of the animals discussed in the first unit are animals which the pupils have not seen, talked about, or heard about in stories. Consequently, the basic subject matter is usually familiar, and the manner of viewing the subject matter, making inferences and generalizing from it, provides the new element. The pupil is guided in the organization of his information through comparing things which he already knows about but which he has probably not considered in their relationship one to another. Consider pages 6-7. Almost every pupil is familiar with red squirrels, rabbits, dogs, kittens, hens, lambs, bluebirds, bluejays, and caterpillars. In this lesson, however, he is asked to compare and contrast known animals with respect to color, size, marking, body covering, number of legs, presence of wings, etc. Thus the essential work of classification is begun with familiar examples, and the pupil is able to give his full attention to the fundamental skills of comparison, contrast, and analysis.

The teacher will find also that the work of *Look and Learn* has been arranged so that there are no lessons about things *per se*. For example, there is no lesson on the *cow*. There are, however, many lessons in which the cow serves as an example of facts that are essential parts of scientific laws. The cow is used as one of several illustrations for the following facts: animals move (page 14); general shape is a means of grouping animals (page 8); the young usually resemble their parents more than they do other animals (page 10); man must care for domestic animals (page 23), etc. It should be noted that, when a picture story dealing with a specific animal is presented, the lesson plans stress the "example" point of view, and the picture story is immediately followed by additional pages which extend and clarify the concepts presented. (See the picture story on page 18 of *Look and Learn*, and the lesson that follows on page 19.)

Use of the "Picture" Technique

If time and available materials in the environment permitted, perhaps the best way to teach elementary science would be through first-hand experiences. Fortunately, books have served and will continue to serve as a means of efficient, indirect learning. Authors of first-grade science books have always been faced with this dilemma: If the books were made scientific, they were unreadable by first-grade pupils; if they were made readable by first-grade pupils, they were but caricatures of science. Practically all first-grade pupils have an experiential familiarity with their environment far beyond the range of their reading ability. The picture technique used in *Look and Learn* enables the pupils to capitalize upon their broad background of experience through directed discussion of science principles and laws.

Types of Pages

Pupils who have had experience with picture books or who have used pre-reading materials understand the symbolism of pictures. There are three types of picture pages used in *Look and Learn.* There is sufficient repetition of each type to establish in the pupil's mind a familiar pattern of procedure. Familiarity with procedure patterns allows the pupil to focus his attention upon science concepts without being confused or hampered by constantly changing methods of presentation.

The "Unit-Picture" Page

At the beginning of each unit there is a full-page orientation picture, the purpose of which is to direct the pupil's thinking toward the general content of the unit.

In presenting the first unit picture, *Animals,* the teacher should first read aloud the title. General examination of the picture with free discussion by the pupils should follow. The teacher is given a keen insight into the individual pupil's science background and oral vocabulary by such comments as: "You can tell this is going to be about animals—there are so many of them in the picture." "Look at that big dog. I have a dog." "That is a collie. My dog is a fox terrier." "I visited my uncle's farm last summer." "I never saw a farm," etc.

This type of discussion also gives the teacher an opportunity to estimate in some detail the extent of the pupil's preparation and helps her decide which points need stress and development beyond that provided in *Look and Learn* and the *Teacher's Guidebook.*

When the teacher is sure that the pupils have the general idea of the picture as a whole, she should direct attention to its specific parts. Guide the pupil's thinking by asking such questions as: "What animals do you see in the picture?" "Which mother animals have their babies with them?" "What makes you think the cow is the calf's mother?" "Which animals can swim?" "Can you name an animal not shown in the picture that can swim?" "Do you see any animals that can fly?"* "Name an animal not shown in the picture that can fly." "Which animals do you see in the picture that walk or run?" "Can you name one not shown in the picture that can walk or run?" "Do you know what kind of dog is shown in the picture?" (collie) "How many of you have dogs? How do you take care of your dogs?"

Thus the teacher will get an idea of the extent of the pupil's knowledge concerning (1) kinds of animals, (2) physical characteristics by which certain animals may be identified, (3) resemblances of baby animals to their parents, and (4) various types of animal locomotion. Recognition of individual pupil differences within the class will enable the teacher to adapt the specific lesson plans of the unit to individual and group needs.

The "Picture-Story" Page

The picture stories in *Look and Learn* (see pages 4-5 of *Look and Learn*) are similar in general construction to those found in such pre-reading books as *Before We Read.*** The picture story consists of several pictures, each of which represents an incident and which in sequence tell a story. The picture-story lesson often appears in *Look and Learn* as a general introduction to concepts to be more fully developed on following pages.

Note to the Teacher: Examination of the pictures should proceed in a left-to-right direction, promoting directional orientation to the printed page in reading.

When presenting the picture-story lesson, the teacher should make sure the pupils understand that the group of pictures is to be thought of as a story. After the teacher has read aloud the title and encouraged comments on it, the pupils should be led to look at the group of pictures and to talk about them. Detailed conversation and analysis need not, however, take place at this time. During the preliminary examination of the story "A Friend for Puppy," pages 4-5, for example, the pupils might discuss the kind of dog Puppy was, whether they would prefer another name for him, where he lived, their dogs, etc.

Keeping the title in mind, the pupils should then analyze each picture in sequence, and the teacher should ask questions to bring out information necessary for the telling of the story. She might say, "This story is about a lonesome puppy. What is happening in the first picture? Why do you think Puppy is going away? (He is lonesome and wants a playmate.) Do you think the toad would make a good friend for Puppy? How is the cow different from Puppy?" (For a complete lesson plan, see pages 6-7 of the *Teacher's Guidebook.*)

When each picture has been examined, the oral story should be told by the pupils. The complexity of the story will depend upon the maturity and background of the pupils. When a satisfactory oral story has been prepared by the entire group, the story may be made into a chart.

The teacher may find it advisable to direct the pupil's attention again to science concepts brought out in the discussion.

The picture-story lesson thus is not only pleasure-giving but also is an efficient means of presenting the concepts to be discussed in pages that follow. The picture story on pages 4-5, for example, introduces concepts to be found on pages 6, 7, 8, and 9.

The "Skill-Building" Page

In the field of science great strides may be made in developing good habits of thinking, for the objectivity of science stimulates mental attitudes and skills that are greatly to be desired. Several types of skill-building pages are used in *Look and Learn.* When introducing these pages, the teacher should first read aloud the title, if one is used, and should explain to the pupils exactly what they are to do. If, for example, they are to make simple comparisons, they should understand the procedure thoroughly. This will eliminate hit-or-miss examination of pictures. Free discussion, which in the case of the picture story *precedes* the formulation of the story, usually *follows* the work in the skill-building page. With this type of page, attention should be centered upon the problem to be solved and the technique of solving it. The preliminary work may include identification of the animals, plants, or objects pictured, and a demonstration of the procedure to be followed. It is preferable to study each problem separately, rather than ask the pupils to consider fully the page as a whole. The immediate follow-up work should include justification of answers and further discussion of the problem, so as to relate it to the pupil's own experience.

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* Stress that in science the generic meaning of *animals* includes animals that fly.

** Scott, Foresman and Company.

An examination of the skill-building pages will show that they include exercises which involve:

Observing accurately and skillfully
Making inferences
Generalizing
Classifying according to various criteria
Selecting that which is different in an otherwise homogeneous group
Identifying ways in which things are alike and different
Indicating relationships through matching
Identifying irrelevant or incorrect data
Visualizing and describing omitted incidents

The Lesson Plans

Because *Look and Learn* is a non-reading book, the science concepts and the science skills which are fully and carefully planned for each lesson may not be obvious. For this reason the *Teacher's Guidebook* has been bound with *Look and Learn* to facilitate the presentation of each lesson. In the lesson plans provided in the *Teacher's Guidebook* the teacher will find the following:

1. Suggested unit activities of a general nature
2. The relation of the page to the unit—a statement of the part which the lesson plays in developing desirable major science principles or concepts, or the value of the lesson in building certain skills.
3. Suggested preparation for the lessons, including possible demonstrations, experiments, observations, etc.
4. Suggested procedure for developing the concepts through picture interpretation.
5. Suggested activities extending and enriching the pupil's understanding.

Many activities are suggested in the *Teacher's Guidebook*. Additional activities planned by the pupils and the teacher will prove valuable, especially those involving local situations. Local environment, together with the amount of time which the teacher has at her disposal, will largely determine the choice of activities. However, in a field as interesting to pupils as science, many of the activities may be undertaken independently by individuals or groups, and the science period used for reporting findings. Every effort should be made to allow for full experience not only in using *Look and Learn* but also in carrying out the related activities. The extent of the pupil's science understanding will depend upon the use he makes of *Look and Learn* to interpret his own environment and experiences.*

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* The teacher should keep in mind that the content of *Look and Learn* should serve to promote further exploration in science and that the book itself does not necessarily represent the total science program for the first grade.

UNIT 1 Animals

The Animal Unit, pages 3-24, is especially stimulating to the pupils, since a genuine interest in animal life is characteristic of most children.

The four underlying principles of the unit are: 1. There are many kinds of animals. 2. Animals live in various environments. 3. Animals carry on activities to keep alive. 4. Man uses animals for various purposes.

In order that the pupil may obtain maximum value from the unit, the work should be closely related to the pupil's environment. It has been planned that the lessons will proceed in the order in which they appear in *Look and Learn.* However, if for reasons of locality or season, the order of presentation must be changed, the teacher should keep in mind that the following page groups form natural units of instruction: 4-5; 6-9; 11-13; 14-15; 16-21; 22-23. The pages within these natural units should be studied in sequence.

General Concepts

A. There are many kinds of animals.
   1. Animals have definite physical characteristics by which one can be distinguished from another.
   2. Most baby animals are more like their parents than like other animals, and grow to resemble their parents.

B. Animals live in various environments.
   1. Some animals live on land.
   2. Some animals live in water.
   3. Some animals live on land and can fly.
   4. Some animals live both on land and in water.

C. Animals carry on activities to keep alive.
   1. Most animals can move about.
   2. Most animals find or build homes.
   3. Animals must find food to live and grow.

D. Man uses animals for various purposes.
   1. Some animals provide pleasant companionship.
   2. Some animals provide man and animals with food.
   3. Some animals provide man with materials for clothing.
   4. Some animals assist man in his work.
   5. Some wild animals are confined in zoos in order to provide man an opportunity to observe and study them.

Materials and Activities of the Unit

The work of the unit is based largely upon observation, and no special equipment is required.

In order to deepen and broaden the pupil's understanding of science concepts presented in the unit, the following activities are suggested:

1. Have the pupils collect colored pictures of various animals. Mount each picture separately, so that the picture collection may be used to classify animals as to color, body covering, general shape, relationship, size, habitat, type of locomotion, etc. Such a picture collection may be used to extend many of the concepts presented in the unit.
2. Hold a pet show or a pet circus. Make charts or posters showing the training and care of pets. In this activity stress the duty of the owner to provide food and shelter.
3. Examine the structure of birds' nests (those that have been abandoned) and compare nests of different birds.
4. If possible, visit a zoo or a farm. Make sure that a specific purpose or problem is set up before such excursions are taken.
5. Find out how man uses various animals and make posters to illustrate these uses.
6. Find out how a farmer takes care of domesticated animals.
7. Bring animals, such as snails, turtles, a hen and chicks, etc., into the schoolroom for direct observation. Plan the care and feeding of the animals before they are brought to the room.
8. Establish a feeding station for birds.

9. If a Lubbock ant nest is available, use it to observe the colony life of ants.
10. Make nonsense pictures similar to those on page 17 of *Look and Learn.* These pictures may deal with habitat, locomotion, animal grouping, etc.
11. Make up riddles about animals, such as:

> I am a big animal.
> I eat in the barn.
> I have a long tail.
> I help work at the farm.
> I pull things.
> What am I?

These suggested activities should be supplemented by others planned by the pupils or teacher. Activities based upon local situations are particularly valuable: trips to fish hatcheries, fox farms, mink farms, bird sanctuaries, game preserves, etc.

Introducing the Book

Look and Learn should be presented as an interesting and unusual picture book. Display the book and read the title to the children. Then say, "What did you see on your way to school this morning? Tell us one thing." After several pupils have mentioned something they saw, turn to a page in *Look and Learn* which shows something mentioned by one pupil and say, "On this page I see something that Mary said she saw on her way to school. Find it. Would you like to look for a picture of something you saw?" Distribute copies of the book to the pupils and allow them to make comments about the cover. As they open the book, direct attention to the title page by a comment such as, "The name of this book is *Look and Learn.* There are many things in the book for us to look at and learn about." Let the pupils glance through the books, locating and commenting upon pictures of things they saw on their way to school and about which they would like to learn.

Page 3

Relation to the Unit: To introduce the unit's center of interest; to arouse interest in learning more about animals; to enable the teacher to explore the pupils' background of experience with animals.

When interest in the book has been aroused, introduce the unit theme by asking the pupils to turn to page 3. In informal discussion lead the pupils to see that the picture is of animals. Indicate the word and tell the pupils that *Animals* is the title of the first part of the book. Lead them to tell what kinds of animals they see in the picture. Then say, "Which mother animals have their babies with them?" Lead the pupils to note that the babies are more like their mothers than like any of the other animals. Encourage them to talk freely about their experiences with animals. Elicit that the word *Animals* is a general term covering cows, birds, pigs, dogs, ducks, chickens, etc. (See pages 2-3 of the *Guidebook* for detailed procedure.)

Pages 4-5

Relation to the Unit: To stimulate discussion of various animals; to indicate some of the ways in which animals are alike and different.

Procedure: Before passing out the books, display pages 4 and 5 and explain that the eight pictures tell a story of what happened to a little puppy one day when the people to whom he belonged were all away from home. Tell the pupils that the pictures are to be read like the "funnies." Indicate the order of progression on page 4 and then on page 5.

After the books have been distributed, read the title of the story and allow the pupils to scan the pictures, making comments freely before beginning a systematic study of each picture.

PICTURE 1. Tell the children that this is the story of a lonesome puppy that had no one with whom to play. Have the pupils look carefully at the picture and tell what is happening. If a pupil should call Puppy a *Scottie,* encourage the use of the word throughout the story.

PICTURE 2. Ask, "What is the puppy doing now? Why do you think he is crawling under the fence?"

PICTURE 3. Ask such questions as: "What animal has Puppy met?" "Do you think the toad would make a good friend and playmate?" Elicit that the toad not only looks different from Puppy but that it moves about in a different way.

Picture 4. Ask, "What is Puppy doing that shows he would not like the cow for a friend and playmate? How is the cow different from the puppy?"

Picture 5. Tell the pupils that Puppy didn't find a good playmate out in the country, and so he has come back to the town. Elicit that the animal he is meeting in this picture will not make a good playmate. Have the pupils tell in what way this animal is like Puppy.

Picture 6. Ask the pupils if they think the cat is likely to be a good playmate and what things in the picture help them to know.

Picture 7. Ask, "What animal is Puppy meeting here? Do you think that this animal will be a good playmate? Are the two dogs exactly alike? Is the black puppy most like the toad, the cow, the horse, the cat, or the other dog?"

Picture 8. Elicit that Puppy has at last found a playmate and is no longer sad. Lead the pupils to make comments expressing their appreciation of the final episode of the story.

Narrative Interpretation: Say to the pupils, "Now we are ready to tell the story. How would you begin the story?" Have different pupils tell the story for each picture. Use guiding questions or comments, if necessary. Encourage the use of descriptive detail. Have a pupil tell the whole story of "A Friend for Puppy." When a satisfactory story has been prepared, the story may be made into a chart.

Pages 6-7

Relation to the Unit: To demonstrate that animals can be classified; to promote ability to perceive likenesses and differences.

Concepts:

A. There are many kinds of animals.
  1. Dogs, cats, cows, squirrels, etc., are called animals.
  2. Birds are called animals.

B. Animals have definite physical characteristics by which one can be distinguished from another.
  1. Differences in color and markings are often distinguishing features.
  2. Differences in general shape and size are often distinguishing features.
  3. Differences in body covering—fur, feathers, scales—are often distinguishing features.

Procedure: Tell the pupils that each picture on pages 6 and 7 has a colored line under it and ask them how many pictures they see on page 6.

Direct the pupils to look at the first picture on the page. Ask such questions as, "What do we call the animal that does not look like the others?" "How many of the animals in this picture look very much alike?" "What do we call them?" "In what ways is the rabbit different from the squirrels?"

Proceed in the same manner with the remaining pictures on pages 6-7, stressing differences in color, relative size, shape of the body, body covering, marking, number of legs, etc. Direct attention to the fact that on page 7 all the animals in Row 1 are dogs, but one dog is distinctly different from the others; all in Row 2 are birds, but one bird is a different kind; etc.

Be sure the pupils understand that color differences alone may not always be used as a means of distinguishing one animal from another. (Note the two black animals on page 5.)

In the discussion use, explaining if necessary, such words as *fur*, *feathers*, *shape*, *coloring*, *marking*, etc.

Extending and Enriching Activities:

1. Using pictures, as suggested on page 5 of the *Guidebook*, continue the work of simple comparison.
2. Observe various common animals to note fur, feathers, skin, etc.
3. Dramatize or tell animal riddles.

Pages 8-9

Relation to the Unit: To promote ability to classify according to increasingly minute likenesses and differences.

Concepts:

A. There are many kinds of animals.

B. Animals have definite physical characteristics by which one can be distinguished from another.

C. Species within a family resemble one another more than they resemble species of other families.

Procedure: Say to the pupils, "The pictures on page 8 have been divided into rows. There is a colored line between each row. How many rows of pictures do you see? Look at the first row of animals. What name do we call three of these animals? (chickens) What is the name of the animal that is not a chicken? (goose) How is it different from all the chickens?" Proceed in the same manner with the other rows of pictures on pages 8 and 9.

In Row 2, page 8, the pupils should perceive that three of the animals are dogs, though of different breeds; in Row 3, three are pigs; in Row 4, three are cows. On page 9, the pupils should perceive that, in Row 1, three of the animals are fish; in Row 2, three are butterflies; in Row 3, three are birds; and in Row 4, three are snakes. No attempt should be made to teach the name of each breed, e.g., Plymouth Rock hen, Leghorn, Rhode Island Red, etc. If, however, some pupil knows and uses the specific name, encourage its use.

In the discussion, use and explain such words as *scales*, *fins*, *wings*, *crawl*, etc.

Extending and Enriching Activities:

1. Reëxamine pages 6-9 as a whole, eliciting that differences in color, marking, shape, body covering, etc., constitute common distinguishing features by which we can classify animals.
2. Using mounted pictures or those on pages 6-9 of *Look and Learn*, the pupils may group together animals that are alike in various ways.

Page 10

Relation to the Unit: To show that the young usually resemble the parents so closely that it is possible to match them visually.

Concept: Most baby animals are more like their parents than like other animals, and the resemblance increases with growth.

Procedure: After distributing the books, read the title of the page aloud and direct the pupils to look at the first picture on the left-hand side of the page. Then say, "Look at the pictures on the right-hand side of the page and find the puppies' mother. What helped you find the right mother?" Elicit similarities in color, shape, etc. Then ask, "How are the puppies different from the mother dog? When the puppies grow up, do you think they will be more and more like their mother?"

Continue in the same way with each of the other pairs of pictures. Make sure that the pupils understand that not all animal babies are the same color as their mothers or resemble them in all minute details.

Extending and Enriching Activities:

1. Have the pupils match other pictures (see page 5 of the *Guidebook*) of baby and mother animals.
2. Observe a mother animal and her young. If possible, take the pupils to the zoo to observe wild animal mothers and their young, and to the farm to observe domesticated animals with their young.
3. Find or draw pictures of mother animals and their young, including wild animals.
4. Tell stories of ways in which some animals care for their young. (Stories which assign human attributes to animals should be avoided.)

Page 11

Relation to the Unit: To introduce the life pattern of animals; to suggest man's duty to animals he has domesticated.

Concepts:

A. Animals follow a definite life pattern.

B. Most baby animals are more like their parents than like other animals, and grow to resemble their parents.

C. Man must care for animals which he domesticates.

D. Man teaches or trains some animals.

Procedure: Introduce the story by asking the pupils to tell about a horse show, a state fair, or a county fair which they have attended or heard about. Discuss the fair or show, especially local prize winners. In the discussion bring out the fact that the first prize in contests is usually shown by a blue ribbon.

Display the picture of the colt on page 10 and the horse pulling the milk wagon on page 5 and ask, "Do you think the baby horse, or colt, could do what the horse is doing?" Elicit that the colt is too young to know how to act in harness and is not strong enough to pull a heavy load. Then say, "Today we are going to look at a picture story of a horse named Star."

After the books have been distributed, read the title and tell the pupils that *Star* is the colt in the first picture on the upper left-hand side of the page. Then ask, "Why do you think the colt was named Star?" (Note the white blaze.)

Guide the interpretation of the pictures and the development of the narrative interpretation as suggested for pages 4-5, bringing out that Star looks much like his mother even when very young; that, as he grows, he looks more and more like her and gallops about the fields with her; that he has to practice over and over again before he can jump well; that only a few horses are trained well enough to win prizes at fairs or horse shows.

In the story development use such words as *colt*, *mare*, *marking*, *train*, *trainer*, *rider*.

Note to the Teacher: Pictures 4 and 5 show steps in training. Other steps in training, such as carrying a saddle and weight before carrying a human rider, have been omitted. If the pupils become interested in Star's training, these additional steps may be explained.

Extending and Enriching Activities:

1. Have the pupils make a list of the things Star's owner probably did to care for him—feeding, providing shelter, brushing, shoeing, etc.
2. Discuss other ways in which horses are used by man.
3. Collect or draw pictures of ways in which man uses horses.
4. Draw picture-strips that show other animals (dogs, birds, cats, etc.) in the stages of growing up.

Page 12

Relation to the Unit: To trace the pattern of growth in human beings.

Concepts: People follow a definite life pattern.

A. Human babies resemble their parents, and the resemblance increases as growth continues.
B. Human babies are dependent upon their parents but become less dependent as they grow.
C. When we grow, we not only become larger, but our physical and mental powers increase.

Procedure: The lesson may be introduced by a discussion of baby brothers and sisters, how they are cared for, etc.

After the books have been distributed, read the title of the page aloud and say, "There are two stories on this page. The stories are divided by a blue band. Look at the first story. Tell what it is about. Look at the second story. Tell what it is about."

Guide the interpretation of pictures, questioning and commenting so as to elicit the fact that human babies are very helpless, that they cannot talk, walk, or feed themselves; that as they grow they learn first of all to walk and talk; that as they continue to grow they learn to do things requiring intellectual or higher skill, such as reading; that as their bodies grow big and strong they are able to play football and skate; that when they are grown up they assume mature duties; that increase in height stops when maturity is reached.

Extending and Enriching Activities:

1. Have the pupils tell things they can do now, but which they could not do as babies.
2. Have the pupils discuss what they want to learn to do when they are bigger, and name some of the skills needed.
3. Discuss food as a factor in human growth. (This work may be related to the health program, if the teacher desires.)
4. Find out how tall and how heavy each pupil is and the height of his parents. The pupils should understand that people vary in height and weight.

Page 13

Relation to the Unit: To determine the pupils' understanding of fundamental concepts of growth; to promote ability to observe accurately and to perceive the sequent nature of growth.

Concepts:

A. Animals follow a definite life pattern.
B. Most baby animals are more like their parents than like other animals and grow to resemble their parents.

Procedure: Read the title aloud and recall the story of Star's growing up. Distribute the books and direct the pupils' attention to the first row of pictures on the page. Ask, "What animal grows up in this row of pictures? In which picture is the horse a baby? Which picture shows the colt to be a little older? Which one shows it as a grown-up horse?" Have a pupil tell the "growth story."

Continue in the same way with the other rows of pictures, having the pupils decide upon the correct sequential arrangement. Make sure the pupils understand that all baby animals are not the same color as their parents and may not resemble them in all minute details. Call attention to the spotted fawn, the antlers developed on the buck, etc. Answers should be discussed to eliminate possible errors, and the pupils should, of course, identify the animals.

Use the words *colt*, *doe*, and *fawn*, in the discussion, explaining their meaning, if necessary. Avoid or correct such diminutives as *birdie*, *kitty*, *kitty-cat*, etc.

Extending and Enriching Activities:

1. Make drawings or posters to illustrate growth in animals.
2. Observe young animals.
3. Make a life picture story of a pet. These pictures may be used as scenes for "movies." (See page 13 of the *Guidebook.*)

Page 14

Relation to the Unit: To illustrate ways in which animals move; to promote ability to perceive likenesses and differences in locomotion; to promote ability to make comparisons.

Concepts: Animals can move about.

A. Some animals can walk, hop, or run.
B. Some animals can crawl.
C. Some animals can swim.
D. Some animals can fly.

Procedure: Introduce the lesson by action games or songs. This may be done during recess or music period preceding the science work and recalled to the pupils. Emphasize the fact that these games or songs required movement. Have the pupils name other activities which require ability to move from place to place.

After the books have been distributed, read the title of the page and have the pupils identify the animals in the first row. Have the pupils answer questions such as, "How does a sheep move from place to place?" Elicit *walks* or *runs*. "How does a cow move? How does a snake move? How does a lion move?" Elicit that the sheep, the cow, and the lion are alike in the way in which each moves. The snake is different from all three in the way in which it moves.

Proceed with the remaining rows of pictures, having the pupils identify (Row 2) the butterfly, fish, fly, bird, (Row 3) bee, worm, snake, caterpillar, (Row 4) three fish, grasshopper. More specific identification is not necessary at this level. In the discussion stress such words as *moves, walks, runs, crawls, flies, swims.*

NOTE TO THE TEACHER: Do not permit the pupils to get the impression that animals that fly have only that method of locomotion. No great emphasis need be put on the matter unless it is apparent that a pupil is making such a deduction.

Extending and Enriching Activities:

1. Arrange or draw pictures to illustrate such sentences as *These animals can fly*, *These animals live in water and can swim*, etc.
2. Discuss physical structures directly involved in locomotion: legs, wings, fins, and tail. (Detailed study of these structures is not recommended at this level.)
3. Make direct observation of locomotion in as many animals as possible.
4. Dramatize riddles about methods of locomotion.
5. Observe a very small animal, such as a fly, so that the pupils will understand that size has no relation to ability to move.

Page 15

Relation to the Unit: To extend the concepts of animal locomotion.

Concepts: Animals can move about.

A. Some animals can walk.
B. Some animals can fly.
C. Some animals can swim.
D. Many animals use two or more methods of locomotion.

Procedure: Develop the picture story as suggested for pages 4-5 (see pages 6-7 of the *Guidebook*). Stress the three methods of locomotion used by the ducks as compared with one method used by the cat. Discuss the advantage given the ducks by their being able to move in more than one way.

Page 16

Relation to the Unit: To illustrate land and water environments and types of animals found in them.

Concepts: Animals live in various environments.

A. Some animals live on land.
B. Some animals live on land and can fly.
C. Some animals live in water and can swim.

D. Some animals do not live in water but are equipped to swim in or on the water and find food in the water.

Procedure: Distribute the books and ask a pupil to describe the picture at the top of the page, naming all of the things he sees—fields, trees, farm, etc. Be sure that the pupils see that there is no water shown in the picture. Bring out the idea that we call such a place *land.*

Then say, "There are four animals pictured below this large picture. Look at the first animal. How does it move from place to place? How does the lamb move? How does the butterfly move? How does the turkey move? In what other way might the turkey move? Do you think the turkey could move about in a place like the one the picture shows? Could the other three animals?" Elicit that a fish can swim and live only in water, and so the fish could not live in a place similar to the one shown.

Follow the same procedure with the second large picture and the animals pictured below it. Stress the fact that ducks and frogs can move about both in water and on land, that fish live and move about only in the water, and that a cat doesn't like to be in water and rarely swims.

Extending and Enriching Activities:

1. Classify pictures (see page 5 of the *Guidebook*) according to whether animals live (1) on the land, (2) in the water, (3) both on land and in water.
2. Draw the two large pictures found on page 16 of *Look and Learn,* putting in the correct animals. Add pictures of other animals which might be found in the same environment.

Page 17

Relation to the Unit: To summarize the work on land, water, and land-water environments; to give practice in seeing relationships.

Concepts: Animals live in various environments.

A. Some animals live on land.
B. Some animals live in water.
C. Some animals live on land and in water.

Procedure: Distribute the books. Elicit that the first picture on page 17 shows a pasture with animals feeding. Ask, "Do you see anything wrong in the picture?" Elicit that the picture shows a cow flying and a fish trying to swim on the ground. Have a pupil tell where the cow should be. Ask, "If the cow wants more food, how could she go to another place to get it?" Bring out the fact that a cow can move about and find food on the land, but that a fish can neither move from place to place nor secure food on the land.

Continue in the same way with the second picture, finding the animals that are seeming to do things that it is impossible for them to do. Bring out the fact that ducks, turtles, and fish can all move about and find food in water; that a dog sometimes swims, but cannot walk on top of water and he does not find food in water; that turtles cannot fly.

NOTE TO THE TEACHER: It is not advisable at the first-grade level to insist upon making distinctions between fish, water birds, and water mammals or reptiles.

Extending and Enriching Activity:

Draw nonsense pictures similar to the ones on page 17 of *Look and Learn.*

Page 18

Relation to the Unit: To provide a common example of how animals find food in their environment.

Concepts: Animals must have food to live and grow.

A. Wild animals find food in their environment.
B. Some wild animals eat many kinds of food.

Procedure: Develop the picture story as suggested for pages 4-5 (see pages 6-7 of the *Guidebook*). In Picture 2 the bear finds berries; in Picture 3, fish; in Picture 4, honey; in Picture 5 he is rooting in a vegetable garden; in Picture 6 he is being chased out of the garden by a dog.

Extending and Enriching Activities:

1. Discuss how the bear's claws help him in obtaining food. (Avoid giving erroneous impressions of cause-and-effect relationships, such as "The bear has claws so that he can get food.")
2. Discuss the physical characteristics that help other wild and domestic animals get food. Confine the discussion to animals the pupils know well or can observe readily.
3. Find out what foods other wild animals eat. (No distinction between herbivorous and carnivorous animals need be made.)

Page 19

Relation to the Unit: To provide further examples of food-finding in typical environments; to indicate various types of foods which animals eat.

Concept: Animals find food in the environment in which they live.

Procedure: Introduce page 19 by recalling the third picture on page 18 or by re-examining page 18 and naming what the bear found to eat. Suggest that animals do not all eat the same foods. Have the pupils study each row of pictures, naming the animal shown (bird or robin; squirrel; bird, gull, or water bird). Have the pupils tell what the animal is shown to be eating, where it found the food, and what physical characteristics helped it get food.

Extending and Enriching Activities:

1. Discuss the helplessness of the baby robins in Row 1 and the ways in which they are cared for. Discuss other comparatively helpless young animals which are fed and protected by the parents.
2. Find out what other foods the animals shown on page 19 may eat.
3. Discuss the value of birds to the farmer, stressing insect and weed-seed consumption.
4. Make posters to show the kinds of food various common animals eat.

Page 20

Relation to the Unit: To summarize the work on food-finding in the environment.

Procedure: Tell the pupils that the fox shown at the bottom of page 20 is very much like the bear (Page 18) in his eating habits, although he isn't fond of honey, as the bear is. Have the pupils look at the large picture and decide what the fox might like to eat if he lived in a woods like the one pictured. (The fox would eat the birds, the rabbit, the chipmunk, the fruits, and the berries.) Stress the fact that some animals eat both plants and animals.

Page 21

Relation to the Unit: To contrast food-getting of wild animals with that of domesticated animals; to promote ability to compare and contrast.

Concepts: Animals must have food to live and grow.

A. Wild animals find food in their environment.
B. Animals which are used by man must be fed by him.

Procedure: Introduce the page by discussing pets. Encourage the pupils to tell about their pets—what things they have been trained to do, and how they are cared for.

Have the pupils examine each pair of pictures on page 21 and tell what each animal is doing, how the wild animal got its food, and how the pet animal is being cared for. In the discussion stress that few pets would be able to adapt themselves readily to a wild environment and obtain food successfully.

In the discussion use the words *wild* and *tame*, explaining their meaning, if necessary. Make sure that the pupils understand that a wild animal need not necessarily be a lion or a tiger and that tame animals are not always pets.

Extending and Enriching Activities:

1. Continue the discussion of pets, pet training, pet care, etc.
2. Make booklets describing the proper preparation for and care of a new pet—making a bed for it, helping it adjust itself to a new home, feeding it, etc.
3. Exhibit snapshots of pets.
4. Discuss other ways in which people use animals—food, materials for clothing, transportation, etc.

Page 22

Relation to the Unit: To present types of homes used by man; to introduce various kinds of shelter used by animals.

Concepts: Most animals build or find homes.

A. Most birds make nests.
B. Some animals have colony homes.
C. Some animals use available shelters.

Procedure: Have the pupils examine and discuss the picture at the top of the page and the various kinds of homes for people shown in the picture. Elicit that houses give protection against cold, rain, etc.

Have the pupils discuss the animal homes pictured. Be sure they understand that the bird nest is for one bird family, the ant nest is for an entire ant colony, and the squirrel did not dig the hole in the tree but found it and prepared it for a home.

Extending and Enriching Activities:

1. Find abandoned bird nests of various kinds and compare their constructions. (Stress the cruelty of disturbing in any way occupied nests, touching bird eggs, etc.)
2. Discuss other colony homes, such as those of bees and wasps.
3. Observe an ant colony in a Lubbock ant nest.
4. Discuss other animals which take advantage of natural structures for shelter.
5. Collect pictures of animal homes.

Page 23

Relation to the Unit: To present some of the duties of man to animals.

Concept: Man must provide shelter for the animals he uses.

Procedure: Review man's obligation to feed the animals he uses.

Read the title of page 23 and have the pupils discuss each picture, telling how each animal is being cared for and why man must feed and shelter it. Elicit that zoos have been established (third picture) so that we may study and observe animals we might otherwise never see.

Extending and Enriching Activities:

1. Make a picture collection of the different shelters that a farmer builds for his animals.
2. Visit the zoo. (Note that the natural environments of the animals are closely followed.)
3. Build birdhouses or feeding stations.
4. Find out why birds are valuable, particularly to the farmer.

Page 24

Relation to the Unit: To present man's use of animals.

Concepts: Man uses animals in many ways.

A. Some animals provide him with food.
B. Some animals provide him with materials for clothing.

Procedure: Have the pupils name the four animals and decide from which animal each pictured product is obtained. The pupils should note that more than one product is obtained from some animals.

Extending and Enriching Activities:

1. Visit the grocer and the butcher and find as many animal-derived foods as possible.
2. Discuss other animal-derived foods, articles of clothing, and household articles.
3. If the local situation permits, watch sheep-shearing, angora rabbit plucking, or fowl plucking.

Upon Completion of the Unit

It is helpful for the pupils to enter into some type of summarizing or culminating activity when a unit is completed, for such activities bring to the pupils' attention the concepts rather than the specific examples of the work. Time may not always permit ambitious activities, such as fairs, school exhibits, etc., but at least one science period might be valuably spent in summarizing the work. Other classes may visit the room to see a small exhibit or hear short talks about the science work. Excellent ways of summarizing are "movies" made by fastening a strip of pictures to lengths of broom handles and unrolling the pictures on a miniature stage while pupils describe the work, observations, and trips made during the unit. Parents may be invited to come to the school for a short science program, etc.

UNIT 2 Machines

IT IS THE PURPOSE of this unit to open the interesting field of machinery to children and to show them that machines and tools aid man in his work and often add to his comfort and convenience; that electricity can be one of man's greatest helpers; that machines and tools, to be of greatest value, must be efficiently and carefully handled.

General Concepts

A. A machine is any implement or device that aids in doing work.
   1. Some machines help us to do work with a minimum expenditure of muscular energy.
   2. Some machines help us to do work rapidly.
   3. Engine-run machines have greater power than man- or animal-run machines.
   4. Machines and tools are valuable only in so far as they are intelligently chosen and manipulated to solve a problem.

B. Electricity is a source of power.
   1. It provides light in our homes.
   2. It provides energy to run machines.
   3. It provides energy to operate systems of communications.
   4. It provides an efficient source of power.

Materials and Activities of the Unit

Pupils at this level are usually highly interested in all things mechanical and electrical. The teacher, therefore, will probably discover that her greatest problem lies not in finding a sufficient number of activities for the unit, but in confining the number to one which can be handled within her time limits. The discussion of the unit picture will tend to reveal to the teacher any gaps in the pupils' background of knowledge. These should be filled in by discussion, demonstrations such as those suggested on pages 14-15 of the *Guidebook*, and frequent trips.

Several trips should be arranged, but hit-or-miss observation should be discouraged. The pupils should have a definite, class-formulated problem to solve. More complex problems, such as observing a large building during construction (see page 19), may often be broken down into various sub-problems which can be assigned to groups of pupils. After an excursion, these groups can report their findings to the class and discuss the problem with the entire group.

Many demonstrations and experiments can be conducted in the classroom. Their nature will depend largely upon the specific interests and surroundings of the pupils, and those listed below are merely suggestive. The demonstrations listed involve a minimum of time and require materials usually found in a classroom or those readily brought from home. (The teacher should keep in mind the fact that a demonstration or direct observation is of great value in clarifying and extending the concepts introduced in *Look and Learn.*)

The following activities are suggested:

1. Electricity must be turned on and off. Demonstrate with electric lights, both pull-chain and switch types, and other available electrical equipment—toaster, radio, iron, etc.
2. Machines help us to do work more easily. Dramatize the stories on page 30. A wagon, a wooden box or crate, and a heavy load (books or blocks instead of toys) will be needed.
3. Wheels are common machines for helping us to do work. Tie a cord around a heavy weight, such as several books tied firmly together. Have a pupil pull the weight, then push it, and then carry it. Put the weight in the wagon and have the pupil pull it. Discuss the easiest way of moving the weight.
4. Some machines help us to do work more rapidly. Demonstrate the comparative rates of typewriting and writing by hand.

Bring an electric hand cleaner, a whisk broom or brush, a small piece of carpet, and some talcum powder into the classroom. Rub powder into the carpet and find out the amount of time needed to brush it out and the time required to remove it with the cleaner. Discuss the amount of labor needed for each job. (Be sure to use the same amount of powder each time.)

5. Make a survey of electrical equipment at home. (In neighborhoods where there are widely divergent types of home backgrounds, it is better to omit this activity than to cause any embarrassment to the pupils.)
6. Make a survey of electrical equipment in the school building—lights, stage lighting, movie projectors, clocks, bells, etc.
7. Bring electric trains and other electric toys to school and demonstrate how they are operated.
8. Make posters of electrical equipment with such appropriate headings as: *These make Mother's work easy*, *These give us a pleasant home*, etc.
9. Formulate rules of safety for handling electric equipment.
10. Make posters about tools: *Tools the carpenter uses*, *Tools for making a garden*, *Tools I used in building a bird house*, etc.
11. Make as many exploratory trips as possible to watch carpenters, to see a large building, bridge, or highway being built, to visit a factory, to observe tools and machines being used in many ways, etc. (The value of these trips cannot be overemphasized.)
12. List ways in which we use wheels.
13. Draw or collect pictures showing wheels in use.
14. Find out how people take care of the engines in automobiles, tractors, etc.
15. Observe various kinds of engine-driven machines and the work they do.
16. Make posters and pictures of machines with motors: trucks, tractors, cars, airplanes, motorboats, etc.
17. Make a list of one day's activities and tell what machines and tools were used.

Page 25

Relation to the Unit: To introduce the general subject matter of the unit.

Procedure: Distribute the books and direct the pupils to turn to page 25. Encourage the pupils to comment freely, comparing the living room shown in the picture with their own living rooms.

Then say: "The little girl is cutting out paper dolls. What tool is helping her cut out the dolls? (scissors) How does she make the scissors work?" (with her hands or fingers) Have the pupils name other tools found in their homes, and lead them to infer that tools are helpers.

"Mother is using some tools to help her knit. Do you know what they are? How does Mother make the needles work? (with her hands or fingers) How does another nearby machine (lamp) help her?

"Can you find other helpers in the picture?" (Note the telephone, the radio, the fan, etc.) Tell the pupils that these may all be called *machines*. Indicate the word and tell the pupils that *Machines* is the title of this part of the book.

Then ask: "Do you see the wires that are fastened to the telephone, fan, radio, etc.?" Elicit that these are electric wires and that the machines shown in the picture are operated by electricity.

In the discussion use such words as *electric*, *electricity*, *wires*, *machines*, *current* (optional), *plug*, *switch*, *cord*, etc.

Page 26

Relation to the Unit: To indicate the convenience of electrical devices in the home.

Concepts: Electricity is a source of power.

A. It provides light in our homes.

B. It provides energy to run machines.
Common electrical devices in the home are: irons, clocks, refrigerators, stoves, toasters, etc.

C. Electrical household aids are easy to manipulate, reduce the time required for an operation, or require a minimum of manual effort, etc.

Procedure: Have the pupils observe carefully and comment on the picture, and, if the local situation permits, compare the picture of the kitchen with the kitchens in their own homes. As the pupils mention each electrical device shown in the picture, have them tell how it is used. Have them identify any tools or machines shown in the picture which are not electric (grinder, faucet, etc.).

Extending and Enriching Activities:

1. Have the pupils list electrical equipment which they have seen.
2. Explain that electricity is bought, and show the pupils the school's electric meter.
3. Find out how household electrical equipment should be cared for to protect its life.

Page 27

Relation to the Unit: To suggest the advantages of electrical household aids; to promote ability to compare and evaluate.

Concepts: Electricity provides an efficient source of power.
Electrical household aids are easy to manipulate, reduce the time required for an operation, or require a minimum of manual effort.

Procedure: Have the pupils compare each pair of pictures, identify the electrical equipment, and decide what its advantages are over the contrasting non-electrical equipment. Have the pupils note the electric cord and stress the fact that it is connected to the source of electric current. In the study of the first pair of pictures, stress the ease and speed of cleaning the rug. In the second pair, stress the speed and lack of muscular effort required. In the third pair note the comparatively small amount of manual effort used in getting ice and stress other conveniences of the electric refrigerator.

During the discussion use such terms as *vacuum cleaner*, *washer*, *wringer*, *ice cube*, *tray*, *pick*, etc.

Extending and Enriching Activities:

1. See Activities 1, 2, and 4, found on page 14 of the *Guidebook*.
2. Draw pictures to show the advantages of common electrical equipment: toasters, lights, stoves, etc.

Page 28

Relation to the Unit: To introduce in story form the need of turning electrical equipment on and off.

Concept: Electricity must be turned on and off.

Procedure: Develop the picture story as suggested for pages 4-5. Discuss other electrical equipment and the fact that it must be turned on and off.

NOTE TO THE TEACHER. While such words as *thermostat*, *relay*, and *circuit* need not be used, the teacher may explain that in some electrical equipment, such as refrigerators and telephones, the electricity is turned on and off more or less automatically, once the machine is connected to a source of current.

Extending and Enriching Activities:

1. See Activity 1, found on page 14 of the *Guidebook*.
2. Arrange extensions to light a playhouse, play store, or other project being developed by the class.

Page 29

Relation to the Unit: To promote ability to perceive likenesses and differences in electric and non-electric equipment.

Concepts: Electricity provides energy for many machines.

A. Machines and household aids run by electricity are easy to manipulate, reduce the time required for an operation, or require a minimum of manual effort.
B. Electrical devices must be turned on and off.

Procedure: Read the title aloud and explain to the pupils that in each box there are two or three machines or tools which are used for the same purpose. Direct them to examine the pictures, name the articles shown, tell in what way they are alike or different, and identify the one which must be turned on in order to work. Have them explain why the electric equipment in most situations is better. For example, in Picture 1, both implements shown in the box are beaters and will beat eggs. One beater is operated by hand, and requires muscular energy, while the other operates by electricity and requires no manual effort. Elicit that the electrical beater is preferable because it makes the work of beating easier and faster.

Continue in this way with the remaining pictures. In Picture 2 point out that a radio *per se* is no better than a violin, but in families where no one plays a violin well, there can still be fine music and entertainment brought easily by the radio.

Extending and Enriching Activity:

Formulate rules of safety for handling electric equipment.

Page 30

Relation to the Unit: To demonstrate the use of machines in making work easier; to promote ability to compare, contrast, and evaluate.

Concepts:

A. A machine is any implement or device that aids in doing work.

The wheel, a common simple machine, is a valuable aid to man. (While children readily understand the uses and value of the wheel, it is often difficult for them to understand that a wheel is a machine. The teacher is advised not to insist upon this classification, since the vital thing at this point is not definition but recognition of use and value.)

B. Some machines help us to work with a minimum expenditure of muscular energy.

Procedure: Before distributing the books say: "We use electric machines and tools so much every day that we don't often think about them. Name a few machines and tools.

"Many machines are not run by electricity, but they make our work easier just the same. Carrying things that do not weigh much is not hard work, is it? But carrying or moving things that are heavy can be very hard work indeed." If the pupils are sufficiently mature, the teacher may discuss muscular action, although this is not essential. Elicit that when heavy things are lifted or moved, people's arms and legs may ache as a result of the strain.

Say: "Today we have two picture stories on the page. Look at page 30 and find the two stories. Glance through the two stories and tell us how they are alike." Elicit that the two stories have the same characters and that they begin in the same way: a storm coming and the need to get the toys safely put away before the rain begins to fall.

Develop the first picture story, and then say: "Now let us find out how the second picture story is different from the first. Would we begin the second story in the same way that we began the first story? Are the second pictures in each story alike? How are they different? How will we change our story? How are the third pictures different? How are the fourth pictures different? How will we change our story? In which story do you think the boys worked harder? What helped the boys to move the toys in the second story? How many of you have wagons? Describe a wagon." Elicit that a wagon is a box on wheels; that the wagon box is not a machine, because the box doesn't assist in doing work; that the wheels, because they turn, help us to work.

Have the pupils name other things on which wheels are found. (Bicycles, skates, trucks, cars, etc.)

Retell the two stories and have the pupils decide which shows the easier way of moving the toys. Reiterate the importance of wheels. Stress the fact that, in using the wagon, the boys got their work done with little effort on their part and completed the work of moving the toys in a few minutes.

Extending and Enriching Activities:

1. See Activities 2 and 3, found on page 14 of the *Guidebook*.
2. Draw or collect pictures showing wheels in use.
3. Make a survey at home or in the schoolroom of ways in which wheels help in doing work: lawn mower, wheelbarrow, wheels on vacuum cleaners and carpet sweepers, cars, furniture castors, clothesline fixtures, baby carriages, etc.
4. Make scooters with old skates.
5. Make small wagons at the work bench, using spools or skate wheels for wagon wheels.
6. Make a picture collection showing wheels used in various ways: automobile, wagon, roller skate, bicycle, castors, etc.

Page 31

Relation to the Unit: To demonstrate further the use of the wheel in making work easy; to promote ability to contrast.

Concepts:

A. A machine is any implement or device that aids in doing work.

The wheel, a common simple machine, is a valuable aid to man.

B. Some machines help us to work with a minimum expenditure of muscular energy.

Procedure: Read the title aloud and tell the pupils they are to select in each pair of pictures the one which illustrates the easy way of doing the work. In each case, the pupils should describe the work being done and justify their answers.

In the discussion develop the meanings of such words as *axle*, *castors*, etc.

Extending and Enriching Activity:

Duplicate in so far as possible the situations shown on page 31 and have the pupils determine experimentally "the easy way." A toy wagon and a toy wheelbarrow may be used, and any fairly heavy piece of furniture with removable castors can be substituted for the crib. Do not permit the pupils to lift one another or to move loads which are too heavy for them.

Page 32

Relation to the Unit: To demonstrate that some machines are primarily designed to save time as well as, or instead of, muscular energy; to promote ability to compare and evaluate.

Concepts:

A. Some machines help us to do work rapidly.
B. Some machines help us to do work with a minimum expenditure of muscular energy.

Procedure: Read the title aloud. Have the pupils identify each machine or tool and select the more rapid way of doing the work. Elicit that some machines are valuable because they help people to do work easily. Some machines help people to work rapidly. Some machines help people to work easily and rapidly.

Extending and Enriching Activities:

1. Duplicate in so far as possible the situations in Pictures 1 and 6. (See Demonstration 4, page 14 of the *Guidebook*.)
2. Picture 6 may be used to review the work on electric household helpers, if this seems advisable.

Page 33

Relation to the Unit: To indicate the value of motor-driven machines.

Concepts: Engine-run machines have greater power than man-run machines.

A. Machines with engines are used to move things.
B. Machines with engines can do more work in a given period than an animal or a man can.

Procedure: Ask how many pupils have bicycles. Discuss riding a bicycle, stressing pedalling, the amount of work involved in pedaling, etc. Elicit that one gets tired if he bicycles a long distance or goes uphill.

Say: "Bicycles are fine to own because the wheels make it easy for us to get from place to place. But suppose we wanted a bicycle that we wouldn't have to pedal. What could we do? (*Put a motor on it, Put an engine on it, Get a motorcycle* are acceptable answers.) Yes, if we had engines or motors on our bicycles, we wouldn't have to work at pedaling, would we? The motors would give power to make the bicycles move.

"Many machines have engines in them. Today we are going to look at pictures of machines that have engines."

Read the title aloud and call the pupils' attention to the pair of pictures at the top of the page. Elicit that the tractor with one engine is pulling as much as the horses. Stress the fact that the tractor, with its engine, not only can move things, but can move a heavier load than one horse could move.

When the pupils have discussed the pictures below, have them select the pictures which show machines with engines. Point out that the engine supplies power to make the automobile move.

Have the pupils tell what power could be used to move the remaining objects pictured, as a boy pedaling could give power to the tricycle, a man could push the lawn mower, a horse could pull the wagon, etc. Review pages 25, 29, and 32, eliciting that the girl provides the power to manipulate the scissors, the mother provides the power to operate the knitting needles, and electricity provides the power to operate the fan, etc. Compare the sources of power in the pictures on page 27.

In the discussion use, and explain if necessary, such terms as *power, engine, motor, load, tractor*, etc.

Extending and Enriching Activities:

1. Observe various engine-driven machines and the work they do.
2. Make posters and pictures of machines with engines.
3. Find out how Father takes care of the engine of his car—regular check-up, regular checking and changing of oil, etc.

Pages 34-35

Relation to the Unit: To show the use of tools and machinery in complex, heavy construction work.

Concepts:

A. Some machines help us to do work rapidly.

B. Some machines help us to do work with a minimun expenditure of energy.
  1. The wheel is a valuable aid to man.
  2. Machines with engines are used to move things.

C. Machines must be intelligently chosen and manipulated to give us the most efficient assistance.

Procedure: Discuss erecting buildings, and, if at all possible, visit a large building under construction to find out how machinery and tools assist the men in erecting the building. (With so broad a problem, groups of pupils may be chosen to take over parts of it.) If it is not possible to make such a visit, talk about problems in building large structures—the strength required in the walls and floors, why steel is commonly used, why deep foundations must be made, etc.

Have the pupils examine and discuss the pictures, evolving a carefully organized report of the use of machines in large-scale construction. Call attention to the machine names: steam shovel; truck; derrick; hoist, or crane; rivet gun; bucking bar; beams or girders, etc.

An almost unlimited number and combination of concepts can be stressed in these pages, and the choice will depend upon the interests and background of the pupils. The following are merely suggestive: Pictures 1 and 2—the speed of the steam shovel compared with the speed of men in excavating, preliminary planning of the building, and the use of tools and machines; Pictures 3 and 4—why steel girders are used (strength), why they are painted (to prevent rusting), comparing girders to the boards used in smaller buildings, use of wheels in various parts of the construction, how a crane operates and why it is valuable, how girders are fastened together (riveting may be compared to sewing pieces of cloth together); Picture 5—what rivets look like (a cylindrical shaft of predetermined length with a head, usually rounded for this type of construction), what a rivet gun is, the bucking bar (the curved bar the workman is holding on the side opposite the rivet gun), why a bucking bar is used (the shaft of the rivet is driven against the bar and forms a tight head on the opposite side of the girders); Picture 6—how a cement mixer works, the fireproof quality of this building, etc. The use of electricity in construction work should be brought in also.

Extending and Enriching Activities:

1. If it has been possible to watch a building being erected, make pictures to illustrate steps in large-scale construction.
2. Find out how other large structures, such as bridges or roads, are built and the use of machinery in their construction.
3. Prepare an illustrated story about machines used in constructing a large building.
4. If possible, observe such construction workers as truck drivers, crane operators, steel men, sand hogs, riveters, etc. Make pictures of them working, and, if desired, add descriptive text.
5. Watch small buildings, e.g., homes, being built and contrast the machinery and labor used with that used in the construction of large buildings.

Pages 36-37

Relation to the Unit: To stress the need of intelligent use and selection of mechanical equipment; to provide a problem-solving situation.

Concept: Machines and tools are valuable only in so far as they are intelligently chosen and manipulated to solve a problem.

Procedure: Have the pupils examine the pair of pictures at the top of page 36 and discuss the change which has occurred. (The untidy room has been put in order.)

Read the question aloud and have the pupils select the tools and machines the woman probably would use in cleaning the room. The pupils should justify both their selections and rejections. Discuss also the work done here without machines.

Follow the same procedure for page 37.

Page 38

Relation to the Unit: To stress the value of mechanical equipment in daily life; to promote ability to reconstruct and visualize accurately.

Concept: Machines and tools are valuable only in so far as they are intelligently chosen and manipulated to solve a problem.

Procedure: Have the pupils examine and discuss each picture, talk about their gardens, etc.

Say: "Making a garden means a great deal of work. Who do you suppose made this garden?

The people would have had to work much harder and far longer if they had not had tools to help them, wouldn't they? What tools and machines do you think they used to make this garden and to help it grow? Before you answer, think of the tools your father uses in making and caring for the garden."

Probably all pupils can list such equipment as a hoe, rake, spade, and hose. Many pupils will add such things as plows, cultivators, scissors, insecticides, spray guns, etc. If a pupil mentions seeds, explain that, while seeds are needed for a garden, they are not tools or machines.

In introducing the second picture, say: "This is a fine playhouse, isn't it? It looks strong and well-built. Do you like the color it has been painted?

"Father built the playhouse for the children. What tools do you think Father used?" (If a pupil mentions *broom*, explain that while it is a tool, it would not be used in the construction of the house.)

Extending and Enriching Activities:

1. Make posters of groups of machines and tools used for common purposes, such as making a garden, building a doll house, changing a tire, making a scooter, etc.
2. Decide what tools should be in a home-repair kit.
3. Find out how tools and machines should be cared for: oiling, protection of cutting edges, protection against rain, etc.
4. Check the tools at the schoolroom work bench.
5. Formulate safety rules for using tools at home and at school.
6. Visit a small factory or repair shop to find out what machines and tools are used, what the safety rules are, how the machinery is kept in good working order.
7. Keep a diary of one day's activities to show how machines, tools, engines, and electrical equipment have been used.

Upon Completion of the Unit

The class may be organized into committees, each committee reporting to the class on one of the following topics. (The topics may, of course, be changed to meet local situations or interests of the pupils.)

1. How to Care for Tools to Make Them Last
2. Reasons for Safety Rules in Factories
3. Machines in Our Daily Life
4. Machines and Tools Used at Home
5. Machines and Tools Used at School
6. How Electricity Is Used in School
7. Caring for Electrical Helpers
8. Machines Used in Factories

UNIT 3 Days and Days

UNIT 3, pages 39-52, of *Look and Learn* presents weather as an important factor in people's lives and activities. Daily weather changes and characteristic weather conditions of the seasons are presented, together with their effect upon human activities.

At this grade level the work on weather conditions and combinations should begin with actual observation. For this reason, the lessons in Unit 3 have been so constructed that they may be presented, within certain limits, in varying order without retarding growth in understanding. The unit as a whole may be analyzed as follows:

PAGE 39 (Unit-Picture page) presents sunny, warm weather.

PAGES 40-41 present rainy weather.

PAGE 42 deals with snow and cold weather.

PAGE 43 is a summarizing page to be presented when pp. 39-42 have been completed.

PAGES 44-47 involve common types of weather as a whole.

PAGES 48-49 and 50-51 present weather conditions characteristic of the seasons.

PAGE 52 summarizes the concepts presented in the unit.

The teacher may, if she starts the unit on a rainy day, for example, present page 39 only as a unit decoration, delaying until later its use as a teaching page, and proceed at once to pages 40-41. During the next science period, she may either return to page 39 or proceed to page 42. Use of pages 48-49 and 50-51 might, in some instances, be made prior to pages 39, 40-41, or 42, although this is not usually recommended. While pages 39-42 should be completed before pages 43-47 are studied, the teacher will note that the plan of presentation of the pages in this unit is extremely flexible and assures introducing the unit in terms of immediately observable conditions.

General Concepts

A. There are many kinds of weather.
   1. Sun, rain, and wind are elements of weather.
   2. Weather conditions vary.
   3. Weather changes often.
   4. There are usually definite indications of weather changes, and we are often able to predict weather on the basis of these.

B. Seasons have characteristic weather conditions.
   1. The seasons are: summer, autumn, winter, and spring.
   2. Weather varies from season to season.
   3. Weather varies within a season.

C. People adjust their activities and clothing to changes in weather and season.

Materials and Activities of the Unit

Observations should be widely used in the work of the unit. As weather conditions vary, the pupils should note them and the effect they have upon human activities.

The activities the pupils engage in will be influenced by local climate and the season during which the work is undertaken. The following suggested activities should be changed or supplemented so as to suitably adapt them to local conditions:

1. Following the explanation and suggestions on pages 46-47 of *Look and Learn*, keep a weather chart.
2. Prepare a weekly summary of weather conditions for the class news sheet or the bulletin board. Data for the summary should be taken from the weather chart. To the summary may be added statements indicating the influence of weather upon activities, such as: *It was warm and sunny Thursday, and so we drank our milk outdoors.*
3. Watch clouds and make pictures of the various kinds observed.

4. Construct pinwheels and use them to demonstrate wind action. (Stress safety rules in using pinwheels.)
5. Measure the amounts of rainfall on various rainy days. Use a straight-sided can or glass jar placed in an open spot.
6. Make posters to illustrate the kinds of clothing worn in various types of weather.
7. Decide on the weather normally expected during the season and note days in which the weather varies.
8. The teacher may read aloud weather predictions appearing in the local newspaper. These may be checked against actual weather conditions, class predictions, or used in various other ways. Discuss the importance of weather predictions to farmers, fruit growers, airplane pilots, etc.
9. Observe local storms, such as hailstorms, sleet or ice storms, thunderstorms, windstorms, etc. Note their severity, extent, duration, and damage.

Page 39

Relation to the Unit: To introduce the unit; to provide an example of one common type of weather.

Procedure: Read and discuss the title. Suggest that the title indicates that the unit will tell about various kinds of days.

As the pupils discuss the picture, ask what kind of day is shown. If a pupil replies merely that it is a nice day, lead him to discuss the sunshine; whether it is cold, warm, or hot; whether it is a day in summer or winter; whether the wind is blowing, etc. The pupils should justify their comments by citing evidence from the picture.

In the discussion use such words as *weather, heat, sun, sunshine, clouds, summer, wind, shade*, etc.

Extending and Enriching Activities:

1. Have the pupils tell how they would change the picture to show a rainy day.
2. Compare the day portrayed with actual weather conditions at the time. Discuss similarities and differences.
3. Tell about other things the child in the picture could do on a fine day such as that shown in the picture: have a picnic, help his father, dig in the garden, etc.

Page 40

Relation to the Unit: To present in story form additional weather combinations and their effect upon human activities.

Concepts:

A. Sunshine, rain, and wind are elements of weather.
B. Weather changes often.
C. People adjust their activities to weather conditions.

Procedure: (If possible, the teacher should obtain a photograph or drawing of cumulus clouds.) Develop the story as suggested for pages 4-5. Say: "Look at Picture 1 again and tell all you can about the weather. (Sunny, warm, probably summer.) Look at the clouds in Picture 3. They are often called rain clouds. How would you describe them? These white clouds (show picture of cumulus clouds) are not rain clouds. We often see clouds like these on bright summer days. What are the differences between these clouds and the rain clouds in Picture 3?

"Look at the story again and decide in which picture you are almost sure that it would rain (Picture 3). Tell what helps you to decide." Elicit that clouds often tell us about weather changes.

In the discussion stress such words as *clouds, storm, rain, weather.*

Extending and Enriching Activities:

1. Study the clouds which can be observed. This work should take place over a period of several days so that various types can be observed. It is not necessary to teach the pupils the names of typical cloud formations.
2. Make pictures of cloud formations and add appropriate titles, such as: *These clouds were in the sky Wednesday. It rained soon*, etc.
3. Tell stories of humorous adventures resulting from sudden weather changes.
4. Draw or cut from magazines pictures about proper clothing for rainy or sunny weather conditions.
5. Make picture riddles or tell riddles about weather.
6. Draw pictures of various kinds of weather.
7. Read to the children weather jingles, such as, "One Misty, Moisty Morning," "Rain, Rain, Go Away," and the poem, "Rain" by Robert Louis Stevenson.

Page 41

Relation to the Unit: To indicate factors to be considered when predicting weather changes.

Concepts:

A. Sun, rain, and wind are elements of weather.
B. Weather changes often.
C. There are usually definite indications of weather changes, and we are often able to predict weather on the basis of these indications.

Procedure: Direct the pupils' attention to the large picture at the top of the page. Have them discuss the picture fully, noting the clearing sky, with its lightening clouds, the rainbow, the puddles, the faint yellow light over the road, etc. Read the title and say: "One of the two small pictures next to the large one will answer the question. Look at the large picture again and decide what kind of weather we may expect. Find the little picture that shows the kind of weather you think will follow." (The clear weather.) Have the pupils justify their answers. Continue in the same way with the second group of pictures. (Rainy weather is expected.)

In the discussion stress such words as *lightning*, *rainbow*, *rain*, *clouds*, etc.

Extending and Enriching Activities:

1. Make weather predictions from day to day. Check these predictions with the next day's weather.
2. Read and check weather predictions in the local newspaper.
3. Find out how weather reports and predictions are important to farming, shipping, airplane flights, boat sailings, etc.
4. Discuss the effect of weather on the plans of members of the class (planning a picnic, etc.)
5. Discuss the meaning of the old saying—"Red sky at night; sailors' delight. Red sky at morning; sailors' warning."

Page 42

Relation to the Unit: To show the effect of snow and cold weather upon people's activities.

Concepts:

A. There are many kinds of weather.
    1. Sun, rain, snow, and wind are elements of weather.
    2. Weather combinations vary.
B. People adjust their activities and methods of dress to weather conditions.

Procedure: Discuss the fun the pupils have had in the snow, what games they played, etc. Elicit that the weather is usually cold when we have snow. If the pupils live in an area where snow seldom falls, lead them to infer that the reason for their lack of snow is the moderate temperature during their winter months.

Have the pupils examine and discuss the pictures. Make sure that they note the dark sky, the lights in the house, the falling snow, the deep drifts, and the work and dress of the people in Picture 1. In Picture 2, note the sun, which has come out as it often does after a rainstorm and has made the colors look different. Note the melting snow in Picture 3 and discuss the change in temperature which caused it. Compare the three pictures and note details that show there is a time interval between the pictures.

Extending and Enriching Activities:

1. Name the games and sports which are confined to winter weather: ice skating on ponds or lakes, coasting, etc.
2. List important cold-weather chores, such as: cleaning snow from the walks and roads, heating the house, collecting eggs before they freeze, bringing in milk before it freezes, taking care of the stock, etc.
3. Compare the clothing of the children on page 42 with the clothing of the children on page 38.
4. Draw or cut from magazines pictures of clothing suitable for various weather combinations.
5. If this lesson is studied when there is snow on the ground, melt snow on a stove or at room temperature and demonstrate that snow is changed to water by heat.

Page 43

Relation to the Unit: To promote ability to infer and to make simple generalizations from given data.

Concepts:

A. Sun, wind, and rain are elements of weather.
B. Weather changes often.
C. There are usually definite indications of weather changes.

Procedure: Explain to the pupils that there are three pairs of pictures on the page. Direct the pupils to look at the first pair of pictures carefully, noticing especially the weather conditions shown. Ask, "How is the second picture different from the first? What has happened? If you were drawing a picture of what happened, what kind of weather would you show?" The pupils should justify their answers.

Continue in the same way with the other two pairs of pictures. (The first pair of pictures shows that rain has fallen. The second shows that it has snowed. The third shows that the wind blew hard, but there was no rain.)

Extending and Enriching Activities:

1. Draw pictures to illustrate what happened in the time that elapsed between each pair of pictures shown on page 43.
2. Draw pictures or cut out magazine pictures for additional exercises of the type introduced on page 43.

Pages 44-45

Relation to the Unit: To show possible weather combinations.

Concepts:

A. Weather combinations vary.
B. People adjust their activities and dress to weather conditions.

Procedure: Read aloud the heading for the first column of pictures and point out that all the pictures in the column show some type of rainy day. Have the pupils examine each picture in the column and tell how it is alike or different from each of the other pictures in terms of temperature, wind, and cloud formations.

In Picture 1 the pupils should note the rainbow (recall the rainbow shown on page 41 and what it portended), the light rain, and the absence of wind. Pupils should conclude that it is a warm day, since the child splashing in the puddles is wearing a bathing suit.

In Picture 2 the pupils should note the black clouds, the lightning (recall the lightning on page 41), and the clothing of the child. The pupils should infer that this rain is probably falling during an autumn or winter day, since there are no leaves on the trees and the plants are dark in color.

In the third picture the pupils should conclude that this is a rainy day in spring, should compare the clouds with those in Pictures 1 and 2, and should note the absence of wind.

Follow the same procedure for the sunny, windy, and cloudy days shown, and have the pupils find the picture which most closely approximates the weather observed on the day during which the work is undertaken.

The findings of the two pages should be carefully summarized so that the teacher may be sure the pupils understand the concepts presented. Summaries should involve re-examination of the pictures and should point up the generalization that there are an infinite number of different weather combinations.

Pages 46-47

Relation to the Unit: To suggest weather recording by observation and use of simple symbols.

Concepts: There are many kinds of weather.

A. Sun, rain, snow, and wind are elements of weather.
B. Weather changes often.

Procedure: (The teacher will need a large calendar having sufficient room for weather notations. If this is not available, sheets of oak tag or newsprint may be ruled and numbered as shown on page 47 for the particular month during which the lesson is studied.)

Introduce the pages as follows: "What do you think the children in the pictures on page 46 are doing?" Elicit that they are making a weather chart or weather story so that they will know what the weather is from day to day. Read the caption and then ask, "How does knowing about weather help us? Where can we find information about the weather?

"Look at each picture carefully. Do you notice the window in the pictures? Pretend that you are one of the children in the picture. Look out the picture window and decide what kind of day it is. What is the girl in front of the class doing? Yes, she is hanging up a weather chart to show what kind of day it is. Do you think the picture on the chart describes the day correctly?"

Proceed with the remaining pictures on page 46. The teacher may ask what else could be placed under each picture on the weather chart. (A sentence about the weather.)

Say: "Perhaps it would be interesting for us to keep a record of the weather, as the children in the pictures are doing.

"The picture on page 47 shows the kind of weather chart we might make. This is a page from a big calendar. We have one here that is very much like the one in the book. Look at the one in the book again. It is called 'Our Weather Chart' (show title). Under the title we find the name of the month. The name of the month during which this chart was made is March. What is the name of this month? Yes, here it is on our calendar. (If the pupils have had little experience with calendars, the teacher should explain how they are constructed, the months of the year, the days of the week, the rotation of days of the week, and how to tell on what day a specific date falls, etc.)

"The weather chart in *Look and Learn* tells us that the first day of March was on Monday. What kind of day was the first day of March? What kind of day was the second of March? That is the same kind of day we saw in the first picture on page 46, isn't it? (Continue in detail with the first five days, showing that they correspond with the weather conditions portrayed on page 46.)

"We usually have all kinds of weather in the month of March, for March is the month at the end of winter and the beginning of spring. Some days are cold and snowy, some days are rainy, some days the sun shines, and some days are cloudy. Are there any rainy Sundays shown on the weather chart for March?

"On Saturdays children like to play outdoors. Were there any Saturdays when the children could not play outdoors?

"Find a Friday which would have been a good one for Mother to go shopping. Find a Tuesday when you could have used your sled. Find three days when you could have used your roller skates. Find three days when you would have needed to wear your snowsuit.

"Let us find out how many sunny days there were in March. How many rainy days were there? How many snowy days were there? How many cloudy days? How would you describe March weather?"

Encourage the pupils to make a weather chart similar to the one shown, although the symbols may differ and the pupils may wish to include on the chart information regarding wind and temperature.

Extending and Enriching Activities:

1. Prepare a weekly summary of weather conditions for the class bulletin board. Statements indicating the influence of weather upon the activities of the pupils may be added.
2. Measure the amount of rainfall during several twenty-four hour periods, in order to demonstrate that the amount of rainfall varies. Use a straight-sided, open-mouthed tin can or glass jar. Leave it in an unsheltered spot and, after a rain, measure the height of water with a ruler. These amounts may be recorded for several rainy days.
3. Describe unusual local weather conditions, such as windstorms, hailstorms, ice or sleet storms, etc.
4. Construct pinwheels and use them to demonstrate wind action. (Stress safety rules regarding the use of pinwheels and caution the pupils against running with them.)

Pages 48-49

Relation to the Unit: To present the order of seasons and to reach conclusions concerning typical weather conditions of each season.

Concepts: Seasons have characteristic weather conditions.

A. The seasons are: spring, summer, autumn, winter. The seasons always follow each other in order.

B. Weather varies from season to season.

Procedure: In *Look and Learn* the seasons are presented as periods during which characteristic weather conditions may usually be expected. Too detailed work on the seasons is not advised, and no attempt should be made at this level to explain causes of seasons.

The weather conditions shown are those normally expected in the north temperate zone. Where local conditions require, the teacher should adjust her teaching procedure.

While the method of introduction depends to a large extent upon the pupils' background of experience, the pages may be introduced as follows:

"Look at the four pictures on pages 48 and 49." Elicit that each is a picture of the same garden, but that the garden does not look the same in each picture. "Describe the garden in the first picture. At what time in the year does a garden look like this?

"Describe the garden in the second picture. When does a garden look like this? (Proceed in the same way with the remaining pictures.)

"We have seen this garden in spring, summer, autumn, and winter. Tell us what season comes after winter. Yes, spring comes again." Elicit that leaves will come out on the trees and the spring flowers will bloom again as they are shown to be blooming in Picture 1.

"How many of you have gardens at home? Which picture most nearly shows how your yard looks now? What season is it now—spring, summer, autumn, or winter? What will be the next season? How will your garden look then? Find the picture which shows you."

Stress the sequent nature of the seasons. When this is fully understood, develop concepts of characteristic weather conditions of each season. Recall the weather chart and tell the pupils in what season the month falls. Have them analyze the chart to determine the type of weather which predominated. The pupils should reexamine pages 39, 42, and 44-45 to find characteristic weather conditions of the seasons. Have them recall their own activities during the seasons. From these data they should formulate generalizations similar to the following:

> In the spring the weather begins to get warm. The snow melts, and there are many rainy days. The sun shines too. Flowers begin to grow.
>
> In the summer we have hot weather. The sun shines and there are not so many rainy days as in spring. If we are near an ocean or a lake, we go to the beach in summer. The gardens grow, and we pick flowers and vegetables.
>
> In the fall or autumn the weather begins to get cooler. Some plants die. There are not so many flowers. Darkness comes earlier, and we wear warmer clothes than in summer.
>
> In the winter the weather is often cold. Some days are sunny, but we have snow. It is dark when we go to bed and still dark when we get up. The wind is cold.

(The teacher should be careful to avoid giving the impression that there is only one kind of weather for each season. This error is probably best avoided by analyzing the weather chart as suggested and by recalling various kinds of weather during other seasons.)

Extending and Enriching Activities:

1. Draw pictures of the school garden or home garden during each of the seasons. Label.
2. Draw or collect pictures to show seasonal activities, such as planting, harvesting, canning, etc.
3. Draw or collect pictures to show the kinds of clothing most often worn during each season.

Pages 50-51

Relation to the Unit: To provide experience in associating activities with characteristic weather conditions of the seasons.

Concepts:

A. Seasons have characteristic weather conditions.
   1. The seasons are: spring, summer, autumn, and winter.
   2. Weather varies from season to season.
   3. Weather varies within a season.

B. People adjust their activities to changes in weather and season.

Procedure: Discuss the four pictures at the top of pages 50-51 and compare them with those on pages 48-49. Recall the names of the seasons, pointing out the words. Discuss the kinds of weather usually found in each season.

Say: "The people and things we see across the bottom of the page could be placed in one or more of the big pictures. Look at the pictures at the bottom of the pages. Let's decide where each belongs. The first one shows a child in a sun suit. In what kind of weather would a child wear a sun suit outdoors? When do we have the warmest days? Then in what picture would you put the child?"

Proceed in the same way with each of the small pictures.

Note that some of the subject matter of the small pictures, such as the child wearing a sweater and the farmer plowing, may be placed in more than one season. Call attention to these pictures so that the pupils will understand that weather varies within a season as well as from season to season. (Teachers in localities outside of the temperate zone will need to make suitable adaptations.)

Extending and Enriching Activities:

1. Make pictures or murals to show seasonal activities. Appropriate texts may be added,

such as *Games We Play in Winter, Spring Flowers and Vegetables*, etc.

2. Re-draw the large pictures on pages 50-51 and add some of the people and activities shown in the small pictures.
3. Tell stories about the season and the holidays of each season.
4. Dramatize or tell riddles about seasons.

Page 52

Relation to the Unit: To summarize the unit.

Concepts:

A. There are many kinds of weather.
B. Seasons have characteristic weather conditions.
C. People adapt their activities and dress to changes in weather and season.

Procedure: The pupils should be given every opportunity to enjoy these nonsense pictures, and little formal introduction is needed. The pupils are to find the "silly" part of each picture and tell why it is silly.

They might indicate another picture in which the "silly" part would correctly fit, as, for example, the man strolling unconcernedly through the rain could be put in Picture 3.

The pupils might reëxamine each picture and tell what season is probably portrayed, whether it is cold or warm, what kind of weather is shown, how the people are attired for the weather, etc. In this way the main points of the unit may be successfully summarized.

The pupils will enjoy making other nonsense pictures of this type.

Upon Completion of the Unit

The pupils may reëxamine the pictures in Unit 3 and discuss ways in which weather is an important factor in life. "Movies," posters, and booklets may be made which stress the importance of weather predictions to farmers, airplane pilots, fruit growers, nurserymen, etc.

UNIT 4 Outdoors

THE LAST UNIT OF *Look and Learn*, pages 53-69, presents concepts basic to the understanding of plant life.

General Concepts

A. There are many kinds of plants.
   1. Most common plants that we know have roots, stems, flowers, branches, and leaves, and produce seeds.
   2. Plants have distinguishing features by which we can tell one from another.

B. Plants grow and reproduce their kind.
   1. Many plants grow from seed.
   2. Plants follow a definite pattern of growth.
   3. Seeds produce the same kind of plants as the parent plants.

C. People and animals use plants in various ways.
   1. Some plants are used for food.
   2. Some plants provide man and animals with shelter.
   3. Some plants provide aesthetic pleasure.

Materials and Activities of the Unit

The last unit of *Look and Learn* has been so placed that under ordinary circumstances it will be used in the spring. Thus, the unit offers many opportunities for demonstrations and experiments. However, the practicability of these demonstrations will depend largely upon the season and the general local conditions. Satisfactory adaptations of the suggested demonstrations can usually be made. Full advantage should be taken of the school garden, the home garden, and the window box. Many activities not listed here will undoubtedly be suggested by the particular interests of the pupils.

Demonstrations and Approximate Time Requirements

Sprays of trees in bud, both leaf and flower, should be put in water and watched. Apple, pussy willow, and weeping willow are particularly suitable. Approximate time: 6-10 days.

Lilac sprays will usually show leaves within 8 days.

Demonstrate the life cycle of plants in so far as possible, using materials at hand.

Sprout bean seeds (lima beans are especially suitable for this demonstration) in a glass jar, placing the beans at the sides of the jar so that they may be better observed. Do not use too fine dirt or sand, as it tends to pack too tightly, and germinating seed cannot be clearly seen. The beans should be soaked overnight. When planting, place the beans in various positions so that the pupils may see that the roots always grow down. Approximate time for sprouting: 4 days. (If the pupils' interests indicate curiosity about requirements for plant growth—sun, water, and warmth—start several pots of bean seeds so that they may be used later for this experiment.)

Sprout very small seeds, such as mustard and grass seeds, to show that the size of the seed does not influence its ability to germinate. Sprout on damp cotton or on blotting paper rolled into a shallow cone and partially immersed in a glass of water. Time: 4-6 days.

Additional Activities

1. Following the work on pages 60-61, build a flower shop or greenhouse. If there is adequate sunlight, plants may be grown there. Flowers, posters, and charts may be exhibited, and the flower shop may form a background for the culminating work of the unit, which might be based upon the value of plant life to man.
2. Bring into the classroom for actual observation as many of the plants and flowers shown on pages 54-56 as possible.
3. Collect pictures of common plants—flowers, shrubs, vines, trees, and vegetables. Mount each picture separately and use for various purposes, particularly for extending the

work on plant classification. A collection, to be of the greatest value, should include many kinds of plants. Seed catalogues will furnish many colored pictures.

4. Collect seeds and seed pods and observe likenesses and differences, if the season permits. A permanent collection will be of value.
5. Dissect a bean or pea that has been soaked overnight. Call the pupils' attention to the miniature plant and food contained in the plant.
6. Mount seeds and seed pods found in the locality. (It is advisable to make a permanent collection so that it will be available regardless of the season during which the unit is studied.)
7. Press leaves of trees that grow in the vicinity. Prints, posters, or leaf booklets may be made.
8. Learn to identify the common trees in the neighborhood.
9. Dissect edible fruits, showing the seeds.
10. Make charts of local edible fruits.
11. Visit a grocery store and note the direct plant food, such as lettuce, peas, carrots, etc., and processed plant food, such as canned tomatoes, coffee, flour, etc.
12. Raise radishes, lettuce, or other rapid-growing seeds in a window box.
13. Bring common vegetables to school and note the parts that are eaten by man.
14. Plant sunflowers so that the seeds may be used for the winter birds.
15. Make posters to show plants and plant parts commonly eaten.
16. Make a sand-table demonstration of the aesthetic value of plants, using a cardboard house, sprouted grass seed, etc.
17. Formulate rules for growing plants successfully in the garden: moisture, thinning seedlings, cultivating, spraying, etc.
18. Can some tomatoes.
19. Visit a local cannery or a frozen-food locker.

Page 53

Relation to the Unit: To introduce the unit; to indicate many kinds and uses of plants.

Procedure: Read the title aloud. Discuss the picture, suggesting that this part of the book will deal with many kinds of plants, some of which grow in our own yards. Discuss the kinds of plants shown and their uses. The pupils may tell about their own gardens or the school garden, naming other plants they have at home. If the local season is not that portrayed in the picture, turn back to pages 48-49 and find the picture that most closely approximates local gardens.

Extending and Enriching Activities:

1. Draw pictures of home gardens.
2. Collect pictures or specimens of flowers that grow in home gardens.
3. List the names of flowers in the school garden, or plan a school flower garden.

Page 54

Relation to the Unit: To introduce common ways of distinguishing between flower plants; to develop skill in comparing, contrasting, and classifying.

Concepts: There are many kinds of plants.

A. Daisies, tulips, iris, and lilies are commonly known flower plants.
B. Flower color, size, shape, etc., are ways of telling one flower plant from another.

Procedure: The teacher should, if it is at all possible, bring into the classroom some of the flowers pictured in the lesson. Differentiation of the actual flowers should be made in approximately the same way as differentiation is made in the lesson.

See the lesson plans for pages 8-9 (pages 7-8 of the *Guidebook*) for suggested procedures. Stress the fact that the objects pictured were parts of living plants. The pupils should perceive the general similarity of structure among the varicolored daisies, tulips, iris, and lilies despite differences in color.

The teacher may review page 9, eliciting that despite differences in color, marking, size, etc., the fish in Row 1 are more like each other than they are like the snake, etc. Pupils should note that, in much the same way, while the flowers on page 54 may differ in color, marking, details of shape, etc., several in each row are more like one another than like the "odd" one. In this way, the pupils will begin to grasp important principles of classification.

The pupils should name the flowers shown, although it is not necessary for them to know the names of the varieties—*daisy, rose; tulip, poinsettia; iris, rose; lily, dandelion.*

In the discussion use, as well as the names of the plants, such words as *petals*, *flowers*, *leaves*, *shape*, *stem*, etc.

Extending and Enriching Activities:

1. Examine other living flowers and decide how to distinguish one from another.
2. Make pictures of garden favorites. Discuss similarities and differences in color, size, shape of flowers, leaves and plants in general.
3. Using the picture collection suggested on page 28 of the *Guidebook*, continue the work on plant classification. Flowers may be classified as to similarity of color, size, shape of leaf, etc.

Page 55

Relation to the Unit: To present ways of distinguishing different plants; to develop ability to compare and contrast.

Concepts:

A. There are many kinds of plants.
   1. Some plants grow in tree form.
   2. Some plants grow in shrub form.
   3. Some plants grow in vine form.
   4. Some plants grow in grass form.

B. Plants have distinguishing features by which we can tell one kind of plant from another.
   1. Flower color, size, shape, etc., are common distinguishing features.
   2. The size, shape, and color of leaves are common distinguishing features.
   3. The general contour of the plant and its growing habits are also ways of distinguishing one plant from another.

Procedure: Follow the procedure suggested for page 54.

Discuss trees, bushes, and vines that are found in the neighborhood, pointing out some of their characteristics. In this work stress similarities rather than differences.

Structural similarities should be noted, and broad generalizations should be made regarding distinguishing features.

Thus, in Row 1 the pupils may note that the grasses have long, narrow leaves and bear their flowers and seeds in spikelets.

In Row 2 they should note the general similarity of form of the bushes, as opposed to the tulip plants. Attention should be called to the fact that shrubs have several woody stems.

In Row 3, call the pupils' attention to the characteristics of vines: the stems require support; a vine climbs or creeps.

In Row 4, the pupils should note the general similarity in outline of the trees. Although the pupils should not be required to define a tree, they should note that a tree usually has a single, main woody stem. Develop the use of the term "trunk" for this stem. Pupils should identify the plants: corn, flowering almond, wheat, barley; lilac bush, tulip plant, bridal wreath, barberry bush; morning-glory, ivy, grapevine, evergreen tree; apple tree, palm tree, larkspur, weeping willow tree.

Such words as *vines*, *leaves*, *trunk*, *stem*, *bark*, *flowers*, *buds*, *branch* should be used freely in the discussion.

Extending and Enriching Activities:

1. Observe tree branches which have been forced (see page 28 of the *Guidebook*), noting essential similarities and differences.
2. Observe grass seed which has been sprouted and compare with other plants in the schoolroom or school garden.
3. Compare the stems of bushes, such as lilac or forsythia, with the stems of flower plants, such as tulips, iris, or other available flowering plants.
4. Call attention to the skeletal shapes of various trees when they are not in full leaf.
5. Compare the shape of an available flowering plant with that of a tree. (Attention may be focused upon shape, rather than upon color or other details of the flowering plant, by hanging a cloth in front of the plant and lighting in such a way as to show a shadow silhouette.)
6. Observe available vines: squash, pumpkin, melon, and other ground creepers; ivy, morning-glories, etc.
7. Find out how various common local vines climb. English ivy produces adventitious roots on one side of the stem; grapes and peas produce tendrils; Boston ivy supports itself by "suction" disks at the ends of tendrils; the stems of morning-glories twine about a support, etc.

Page 56

Relation to the Unit: To stress the fact that plants and animals are alive.

Concepts:

A. Animals are living things.

B. Plants are living things.

Procedure: Follow the procedure suggested for page 54. Point out that not all of the pictures show plants, but all pictures show living things. The pupils are to select the plants in each row and name the animals.

In the discussion, some work may be done on ways in which plants and animals are alike (both are alive, both grow) and ways in which they are different (different structures, animals' ability to move, etc.). Too detailed work should not be undertaken at this time, however. The essential purpose is active recognition of plants and animals as living things, as opposed to such inanimate objects as stones, chairs, etc.

Extending and Enriching Activities:

1. Reëxamine pages 54-56 and decide how plants can best be distinguished from one another: color of flowers, number and shape of petals, shape of leaves, contour of plant, etc. Recall statements formulated on ways of discriminating between animals.
2. Make picture books or posters of plants grouped on the basis of factors listed above.
3. Compose riddles about plants and tell or dramatize them.

Page 57

Relation to the Unit: The parts of plants have names. Knowing the names of the most common parts helps us describe and classify plants.

Concepts:

A. Plants grow.

B. Most plants that we know have roots, leaves, stems, branches, and flowers.

Procedure: Develop the story as suggested for pages 4-5.

Have the pupils note the obvious function of the roots in holding the plant upright in the ground. (The teacher may mention other functions of the roots.) The process by which plants make their food should not be discussed at this level.

Extending and Enriching Activities:

1. Draw a simple outline of a plant on the blackboard and label.
2. If possible, show the pupils trees on which the fruit is forming.
3. Picture 5 may be used to stimulate interest in the needs of plants for successful growth: warmth, sunshine, and water. (See demonstrations suggested on page 28 of the *Guidebook.*) Over a period of two weeks, give one pot of bean plants water, warmth, and sunlight. Omit one of the essentials from other bean plants. Records should be kept of the condition of the plants.

Pages 58-59

Relation to the Unit: To demonstrate the life cycle in plants.

Concepts: Plants grow and reproduce their kind.

A. Many plants grow from seed.

B. Seeds produce the same kinds of plants as the parent plants.

C. Plants follow a definite pattern of growth.

D. Some plants live only a year.

Procedure: (The annual used in this sequence is the larkspur, since it is both prolific and hardy.) Before this lesson is presented, soak beans or peas (see demonstrations suggested on page 28 of the *Guidebook*) overnight. Show the pupils the seed structure, pointing out the minute plant and the food for the baby plant.

Develop the picture story as suggested for pages 4-5, being sure that the pupils note the following:

PICTURE 1. Although the little girl bought the packet of seed, the seeds were produced by plants and not manufactured by man, and will produce the same kind of plants as the parent plants. (This is probably best brought out in review discussion after the story has been developed.) Stress the preparation of the soil, time of planting (spring), and the need of warmth and moisture for the seeds to sprout, etc.

PICTURE 2. Elicit that in Picture 2 the seeds in the ground have sprouted and seedlings have developed. Call attention to the comparative size of the plants in Pictures 2 and 3 and note the formation of leaves and main stem.

PICTURE 3. Elicit that the plants have increased in size and are full-grown. Note the flower buds. Compare the plants in Picture 3 with those in Picture 2. Tell the pupils the name of the plants.

PICTURE 4. Elicit that the flower buds are opening. Call attention to the colors of the flowers and elicit that, although the colors of the blossoms differ, the plants are of the same kind. Compare the plants (height, leaf structure, flower structure, and general shape) with plants in the schoolroom. Also compare the larkspur plants with the various plants shown on pages 54-55 of *Look and Learn.* (Pictures 4, 5, and 6 show close-ups of the plant, making study of the flowers and seeds easier.)

PICTURE 5. Call particular attention to the formation of seed pods. If necessary, explain that the seeds remain in the pods until they ripen. Be sure that the pupils understand that seeds develop from flowers.

PICTURE 6. If necessary, demonstrate the effect of a magnifying glass so that the pupils will understand the picture. Call attention to the brown seed pods and explain that the seeds are ripe. Note that the seed pods of the larkspur are held erect and explain that the pod shown in the magnifying glass might have been broken by a passing animal or person, since the stems are dry and brittle. Explain that there are several ways in which the seeds might have been cast about: the movement of a passing animal or person, the action of a strong wind, etc.

PICTURE 7. Note the passage of time to the winter season. Elicit that much of the larkspur seed, although not necessarily all, has been naturally cast about over a fairly small area. If possible, obtain a larkspur seed and show the pupils the shell-like exterior which protects the baby plant from the cold.

PICTURE 8. Elicit that some, not all, of the seeds naturally sown the previous fall have sprouted, and the resulting seedlings have been thinned out so that they will grow. Compare the seedlings with those in Picture 2 and elicit that these are the same kind of plants. Be sure that the pupils understand that these seedlings, like those in Picture 2, will grow, develop buds and flowers, and produce seeds, some of which will sprout.

Extending and Enriching Activities:

1. Collect seeds and seed pods. These may be labeled and placed on posters or in cases and later used in the flower shop exhibit. (See page 33 of the *Guidebook.*) One of the most successful ways of mounting seeds is to put them in cellophane envelopes and label.
2. Compare seeds and seed pods. Elicit that plants produce characteristic seeds and pods.
3. Watch seeds sprout and develop. Lima beans are suitable for this work. (See page 28 of the *Guidebook.*)
4. Trace the life cycle of other plants.
5. Find out about ways in which seeds are naturally distributed. This work should be confined to seeds which the pupils collect or those with which they are familiar. Classify the seeds according to the method of dispersal. A good collection of seeds might include milkweed, dandelion, cotton seeds; maple, elm seeds; sticktights, burdock, Spanish needle; cherries, peaches, oranges, etc.
6. If possible, visit a plant nursery or seedsman.
7. Compare the life cycle in plants with the life cycle in animals. (See pages 12 and 13 of *Look and Learn.*)

Pages 60-61

Relation to the Unit: To compare living and non-living things.

Concepts:

A. Some things are alive.
   1. Plants are alive.
   2. Animals are alive.

B. Some things are non-living.

Procedure: Have the pupils name some things in the schoolroom that are alive (plants and animals) and some things that are not alive. (It is not necessary that the pupils use the words or define *animate* and *inanimate.* It is sufficient that they recognize that many of the things about them are not alive, that many things are living, and that animals and plants are alive.) Distribute the books and have the pupils turn to pages 60-61. Read the title and discuss the picture of the flower shop. Explain that it is close to Easter, and so the florist has many plants and flowers in the shop. The pupils may name the plants and flowers—the lilies, ivy, tulips, pussy willows, etc., but plant identification is not the main purpose of the lesson.

Say: "Let's pretend the florist needs more growing plants and cut flowers, for she is going to sell many. Everyone likes to buy plants or flowers at Easter time. Let's pretend we are getting more plants and cut flowers for the florist. Look at page 61. Pick out the plants and cut flowers for the florist.

"The plants and cut flowers we picked out were alive, weren't they? You will find some things that are alive but are not plants." (Dog and parrot.) "Who can tell us how plants and animals are alike?" (If a pupil replies that they are alike because they grow, etc., accept the answer but develop it to bring out the concept that they are alike because they are alive.)

"We picked out the plants and flowers for the florist. We picked out the other living things—the animals. What kind of things are left now?" (Things that are not alive.)

Have the pupils name the non-living objects.

Extending and Enriching Activities:

1. Make up riddles about living and non-living things.
2. Build a flower shop or greenhouse and use it to exhibit the work and activities of the unit. If the pupils wish to keep living plants in the shop, they should be cautioned that plants need sunshine. (Recall the experiment conducted in connection with page 57.) Unless sunshine is available in the shop, the plants should be put on the window sills for at least two hours each day, preferably in the morning.

   A flower shop or greenhouse may be successfully made with large construction blocks or orange crates, and glassine, cellophane, or tissue paper for windows or skylights. Seed flats, window boxes, and pots may be used for the plants.
3. Find out about arranging cut flowers artistically. Use available flowers and various types of holders to achieve effects.
4. Discuss the care of cut flowers and house plants.
5. Visit a flower shop or nursery. Find out how plants are cared for in a nursery: temperature control, humidifying, etc.

Page 62

Relation to the Unit: To demonstrate how trees provide pleasure for humans; to introduce informally the names of tree parts so that they may be used in discussing and classifying trees.

Concepts:

A. Trees are called plants.
B. Trees have certain broad characteristics which help to distinguish them from other plants.
   Contour, size, and leaf-shape are features which may be used in distinguishing one kind of tree from another.

Procedure: (Although it is not necessary for the pupils to define a tree, they should perceive that generally a tree has a woody main stem, customarily without lateral branches, which culminates in a head of foliage and branches.)

Read the title and have the pupils examine each picture, telling how the tree provides fun for children. Throughout the work stress the parts of the tree which are shown in each picture. The pupils should note that there is bark on the trunk and the branches, that the branches are found near the top of the tree, and that the leaves grow out of the branches. Elicit that the trunk of a tree corresponds to the stem of other plants.

In the discussion, stress such words as *trunk*, *bark*, *woody*, *branches*, *leaves*, *twigs*, *roots*, etc.

Extending and Enriching Activities:

1. If possible, visit a local sawmill or lumberyard so that the pupils may observe ways in which logs are prepared.
2. Although food-making by plants should not be discussed at this level, some of the functions of tree parts may be elicited: the roots anchor the tree firmly in the ground, the trunk supports the branches, the branches hold the leaves into the sunlight, etc.
3. Collect and observe tree flowers and tree seeds.
4. If the work is done during the late winter or early spring, cut twigs from trees and examine the winter buds, particularly noting the protective covering.

Page 63

Relation to the Unit: To stress the value of trees and to indicate ways in which trees may be distinguished from one another.

Concepts:

A. Trees are called plants.
   1. There are many kinds of trees.
   2. Trees have characteristic shapes.
   3. Leaves of trees have characteristic shapes.
B. Some trees provide people and animals with shelter.

Procedure: If possible, bring to the classroom samples of the pictured trees—oak, maple, elm, and poplar—for direct observation and comment.

Read the title and have the pupils discuss the value of shade trees; how bare our homes and streets would be without trees; how shade trees reduce the effects of summer heat when planted near a house; how farm animals often congregate under a tree on hot summer days, etc.

The pupils should examine each of the pictured trees and its leaf. Decide how the shape of each tree differs from the others, and how the shape of each leaf differs from the others. (Be sure that the pupils understand that oak trees always have oak leaves, etc.)

Extending and Enriching Activities:

1. Make a leaf collection, using the leaves for leaf books or posters.
2. Observe and list the trees found in the schoolyard or at home.
3. Draw or collect pictures of local trees. (If the pupils make drawings, the teacher should insist upon accuracy of general tree shape. If the pupils are not sufficiently mature to do this successfully, it is wiser to collect pictures or photographs.)
4. Make a chart of tree plantings in the schoolyard or at home.
5. Plant a tree.
6. If samples of various woods can be obtained, charts combining wood samples, leaves, and pictures or photographs of trees may be made.
7. Make blueprints of leaves for posters.
8. Make decorative plaster plaques of leaves.
9. Discuss other ways in which trees are useful to man.

Page 64

Relation to the Unit: To stress the value of trees and to indicate ways in which trees may be distinguished from one another.

Concepts:

A. Trees are called plants.
B. Some plants provide man with food.
C. Fruits and blossoms have characteristic shapes.

Procedure: If possible, some of the fruits shown, sprays of budded branches, and leaves of trees shown should be brought into the classroom for direct observation. Budded branches may be forced. (See page 28 of the *Guidebook.*)

Recall the shade trees studied in the preceding lesson. Ask about other ways in which trees are of use to man.

Distribute the books and have the pupils turn to page 64. They should discuss the pictures, identifying the fruit—pear, cherry, orange, and plum—and noting the shape of the trees, leaves, etc. Have them compare the general shape of the trees with those shown on page 63.

Extending and Enriching Activities:

1. If possible, examine a fruit tree from which the petals are falling and note the formation of fruit.
2. Observe and discuss other fruit trees and fruit-bearing bushes found in the locality.
3. Cut a pear, apple, cherry, orange, etc., apart and find the seeds.
4. Sprout orange or grapefruit seeds.
5. Visit the grocery store to find out what fruits are available.
6. If possible, visit a fruit orchard to observe spraying, harvesting, or pruning, according to the season. Discuss care of fruit trees.
7. If possible, examine a fruit tree in blossom, or find the newly-formed fruit.
8. Discuss fruit in the diet. (This activity may be correlated with the health work.)
9. Recall or reëxamine the work on weather predictions and reports, and determine the value of weather reports and predictions to the fruit grower.
10. Find out how orange groves are protected from sudden frosts.

Page 65

Relation to the Unit: To demonstrate man's immediate dependence upon plants for food.

Concept: Some plants provide man with food.

Procedure: This lesson may be preceded or followed by a visit to the grocery store to study the commonly available foods which are obtained directly from plants. (The teacher may, if she finds it desirable, point out that since even the animals man uses depend upon plant life, man is ultimately dependent upon plants.)

Have the pupils study the picture carefully to determine the kinds of plant foods shown. The pupils should name as many of the fruits and vegetables as possible.

Particular attention should then be called to less obvious plant foods, such as flour, cereal, and canned tomatoes. If the pupils have canned tomatoes as suggested on page 29 of *Look and Learn*, or have visited a canning factory, recall that activity.

Discuss how wheat is ground to produce flour and name various ways in which we use flour (bread, cakes, pies, etc.).

Extending and Enriching Activities:

1. If possible, visit a local cannery and observe commercial canning methods. Before the trip is made, review the Machine Unit quickly. Plan to watch the machinery used in the cannery and find out about the safety and health rules obeyed by the employees.
2. Discuss edible fruits other than those found on trees: strawberries, melons, raspberries, etc. Examine some of these to find the seeds and note the type of plant on which they grow.
3. Determine how plant foods are used in maintaining a healthful diet. (This may be closely allied with health work.)
4. Review man's use of animals and animal products.
5. Build and use a play grocery store.

Page 66

Relation to the Unit: To present certain edible plants with particular attention to the part usually eaten.

Concept: Some plants provide man with food.

Procedure: Review quickly the work on edible plants presented on page 65. Recall the names of parts of plants: roots, leaves, seeds, stems. (Unless the pupils are familiar with such vegetables as broccoli, artichokes, cauliflower, etc., flowers need not be stressed.)

Have the pupils examine each of the pictures and decide what part of the plant is usually eaten. The vegetables should be classified as follows: celery (stems and young leaves); asparagus (stems); radishes and carrots (roots); lettuce and cabbage (leaves); peas and corn (seeds).

Extending and Enriching Activities:

1. Make pictures of the vegetables eaten at dinner or supper and name the part of the plant which was eaten.
2. Many children are surprised to learn that the corn they eat is the seed of the plant. This may be demonstrated by sprouting a kernel of corn.
3. Plan a small vegetable garden for the home. Discuss preparation of the soil, kinds of vegetables to be raised, when to plant, whether to raise from seed or seedlings, probable time of harvest, and cultivation and care of plants.
4. Continue the work on plant foods. Make posters and charts of minimum daily requirements, locally grown crops, etc.

Page 67

Relation to the Unit: To demonstrate the aesthetic value of plants.

Concept: Some plants provide aesthetic pleasure.

Procedure: If a new house has been completed in the neighborhood and has not yet been landscaped, discuss the house and its surroundings. Elicit that the house itself is pretty, but it does not look so pretty as it will later when the grounds have been landscaped. Decide how plants may beautify it.

Say: "On page 67 of *Look and Learn* there is a picture of a new house. The house itself is very pretty. Something could be done to make the yard pretty, also. Look at the second picture. What has been done? Do you think the yard looks better? Do you remember the grass seed we sprouted? How will the people in this house have to take care of their new grass?"

Continue with the remaining pictures, eliciting the various improvements pictured. Stress also uses of plants other than for ornamentation—if there were no grass, the soil would soon be washed away, etc. Demonstrate by pouring water over slightly graded sand in the sand table. Call attention to the resultant gullies. Elicit that the small vegetable garden will give food, the flowers give beauty in the house as well as in the yard, etc.

Extending and Enriching Activities:

1. Duplicate the story on the sand table. Grass may be grown, twigs of live trees will keep green for some time in damp sand, artificial flowers for the garden may be made, etc.
2. Discuss the work involved in landscaping a yard: soil preparation, care of a new lawn, how to plan a garden, how trees should be planted, etc.

3. Plan ways in which to make the schoolroom more attractive through the use of plants. Plan possible rotation of plants and flowers to give variety of appearance. Review the requirements of plant life. A committee may be appointed to carry out these plans.

Pages 68-69

Relation to the Unit: To summarize the unit; to provide stimuli for discussion of the book as a whole.

Concepts: People and animals use plants in various ways.

A. Some plants provide food and materials for clothing.
B. Some plants provide man and animals with shelter.
C. Some plants provide aesthetic pleasure.

Procedure: Explain to the pupils that each picture illustrates a way in which plants are used by man or animals. The pupils are to study the picture and name the way in which the plant is used. Most of the work will be done independently, although the teacher should assist with comments and questions when necessary.

Other uses of plants should be discussed. Uses in local industries are particularly important, such as obtaining turpentine, paper-making from rags and from wood pulp, milling, commercial baking, spinning of cloth, etc. Reference to the work on weather and seasons may be made in reëxamination of Pictures 1, 2, 3, and 4 of page 68 and Pictures 2 and 4 of page 69; to animals' environments and food-getting in Picture 6 on page 68 and Picture 5 on page 69. (This discussion should lead to re-examination of the book; choosing favorite, prettiest, or most interesting pages; and recognition of many of the interrelationships of animals, plants, weather, and machines.)

Extending and Enriching Activities:

1. Make a series of posters or a mural to show the use of plants in the local environment. This should include plants as food, plants as shelter, and plants for other specialized uses.
2. Exhibit products obtained from plants, such as cotton goods. Picture the steps in producing the products.
3. Keep a careful diary of one day's activities to find out how weather, machines, plants, and animals contribute to the day.
4. Assemble a collection of plants, animals, and non-living things (pictures or specimens), classified as Living Things: Plants, Animals; and Non-Living Things.

Upon Completion of the Unit

Using the flower shop as a background, hold an exhibit of posters, pictures, construction, and experimental work of the plant unit. If the season permits, give prizes for the best garden produce and flowers. Make "movies" (see page 13 of the *Guidebook*) of the trip that the class considers most interesting. Invite parents, another class, or friends to see the exhibit.

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